The PHOTOFACT Servicer

SET 410 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ AUG. 1, 1958

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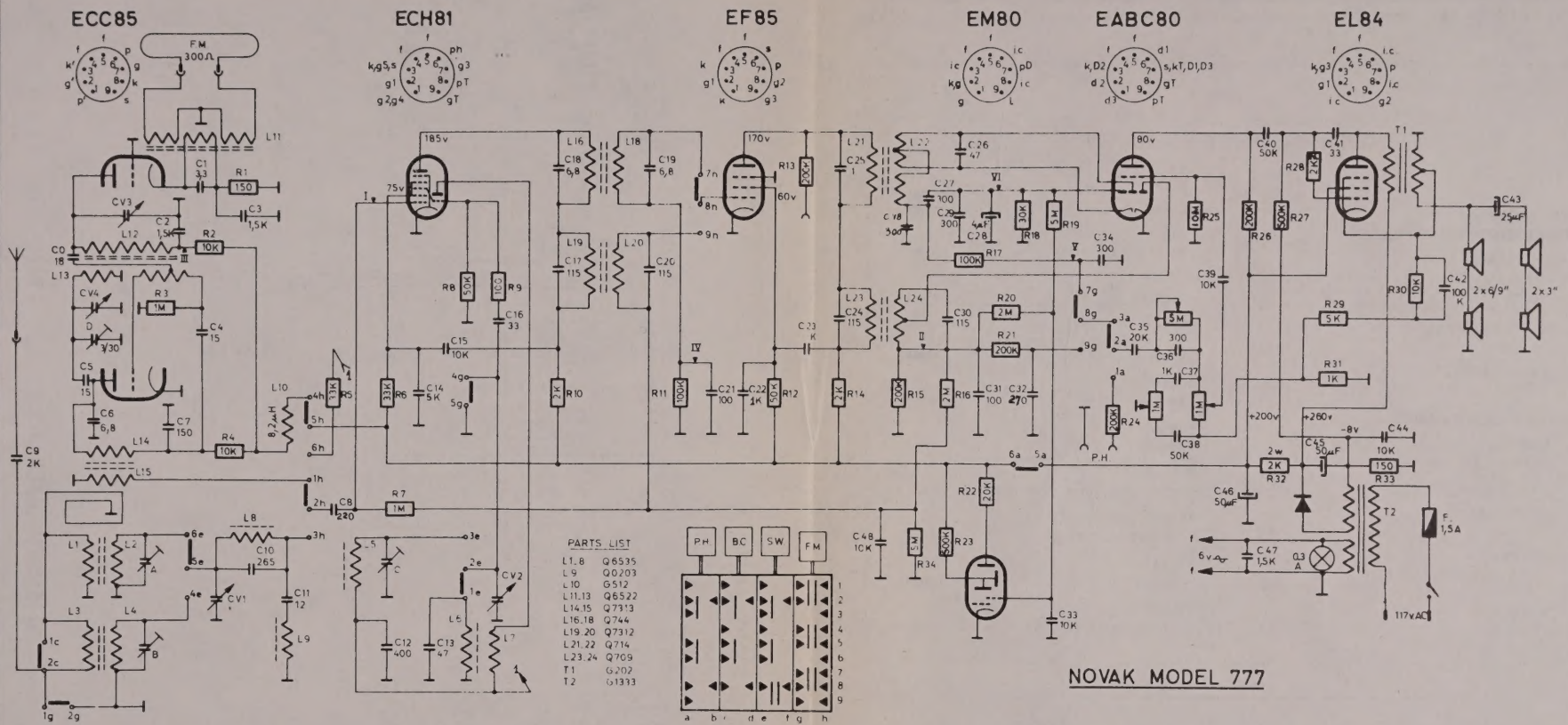
The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.

NOVAK "DAUPHINE" MODEL 777



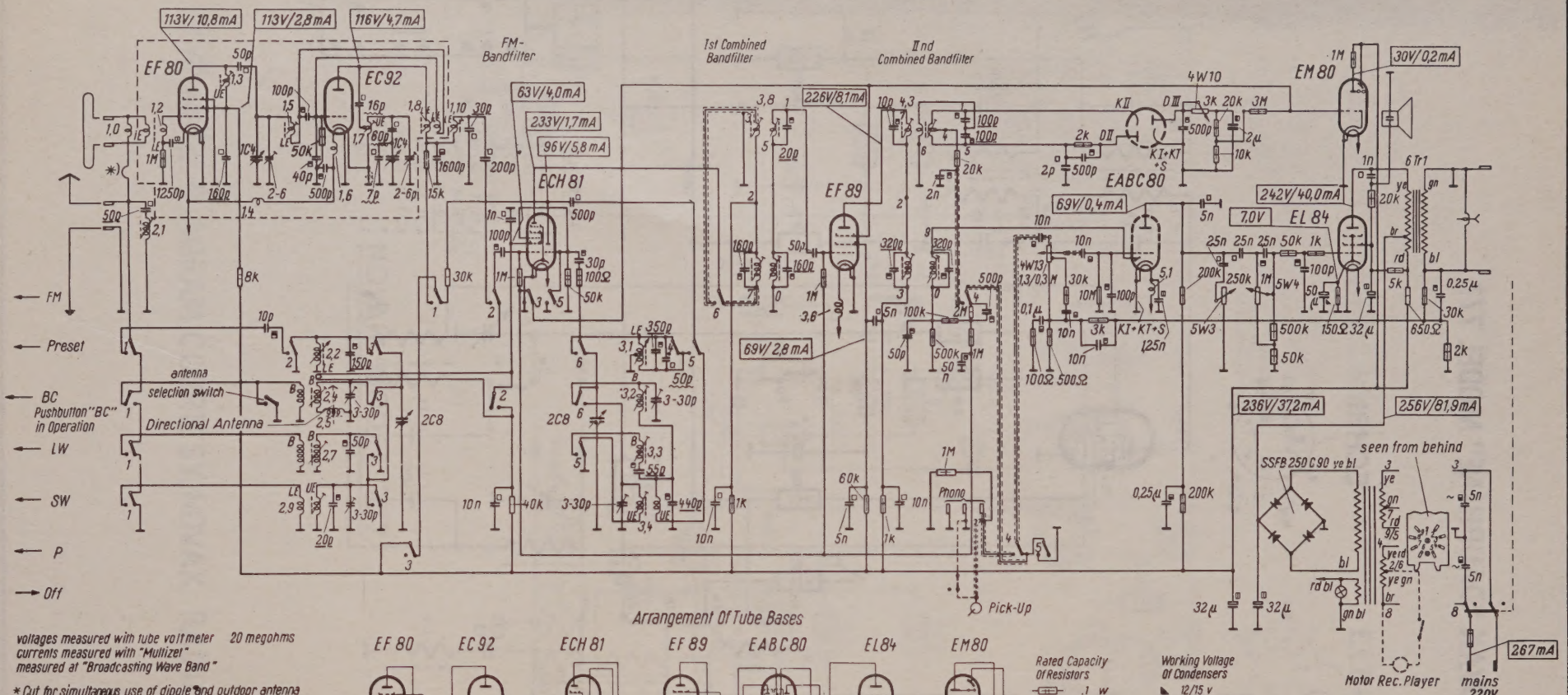
PARTS LIST

L1..8	Q6535
L9	Q0203
L10	G512
L11..13	Q6522
L14..15	Q7313
L16..18	Q744
L19..20	Q7312
L21..22	Q714
L23..24	Q709
T1	G202
T2	G1333

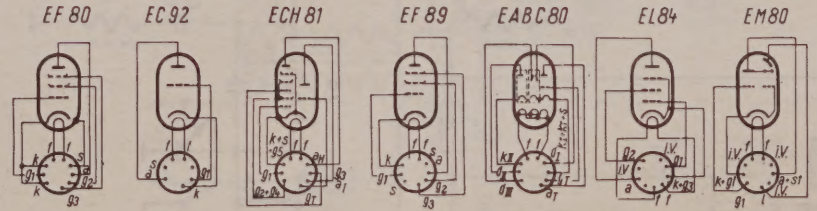
NOVAK MODEL 777

SCHEMATIC DIAGRAM COURTESY NOVAK RADIO CORP.

SEIMENS G41 USA, K43 USA



Arrangement Of Tube Bases



voltages measured with tube voltmeter 20 megohms
currents measured with "Multizet"
measured at "Broadcasting Wave Band"

* Cut for simultaneous use of dipole and outdoor antenna

B = Beginning
E = End
UE = Upper End
LE. = Lower End
Inn.E. = Inner End

Alterations Reserved

—— underlined capacity values:
ceramic or similar condensers with ≤ 2,5% tolerance

〰 underlined capacity values:
ceramic condensers with special temperature coefficient
for stabilization

G 41 USA
K 43 USA

Rated Capacity Of Resistors

.1	w
.25	w
.5	w
1	w
2	w

Working Voltage Of Condensers

12/15	v
125	v
250	v
350/385	v
500	v
65/100	V

Drawn Position Of Push Buttons: "BC" In Operation

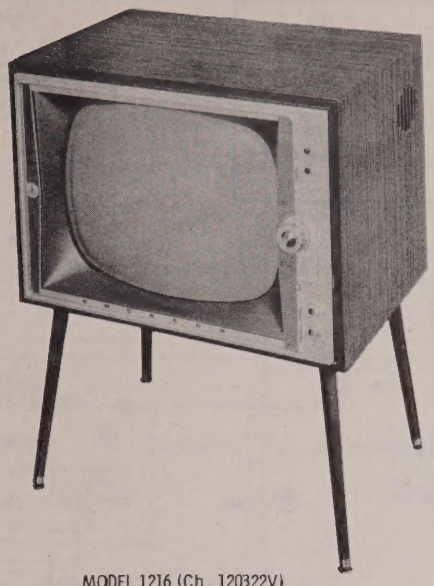
gn	= green
bl	= black
gn bl	= green black
ye	= yellow
rd	= red
br	= brown
rd bl	= red black
ye bl	= yellow black
ye gn	= yellow green
ye rd	= yellow red

SCHEMATIC DIAGRAM COURTESY SEIMENS & HALSKE AKTIENGESSELLSCHAFT

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 8 push-on type knobs from the front.
2. Remove 8 wood screws holding rear cover. Remove rear cover.
3. Remove speaker leads.
4. Remove 2 wood screws holding antenna terminal board.
5. Remove 2 metal and 4 wood screws holding chassis support brackets.
6. Remove 2 metal screws holding power transformer bracket to cabinet.
7. Remove the 4 front corner screws (inside front of cabinet) holding die cast front to cabinet brackets.
8. Remove chassis from front of cabinet.



MODEL 1216 (Ch. 120322V)

TRADE NAME	Emerson	MODELS	CHASSIS
		1248	120322E
		1214, 1216, 1218	120322V
		1215, 1217, 1219	120323T
		1224, 1226	120329V
		1225, 1227	120330T
MANUFACTURER	Emerson Radio & Phonograph Corp., 14th. & Coles Sts., Jersey City 2, N.J.		
TYPE SET	Television Receiver		
TUBES	Twenty		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 195 Watts, 1.7 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, as the Channel Selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove the Channel Selector and Fine Tuning knobs. Insert fingers behind retainer strip and pull out. Remove bottom and top metal retaining strips by pulling out. Remove 2 metal screws holding safety glass brackets. Move right side of glass outward to clear shafts and remove.

SPECIAL ADJUSTMENTS

A. Local-Distant
Observe the picture and advance the Local-Distant control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

B. Focus
Adjust the Ion Trap for the best focus consistent with maximum brightness.

C. Width
The width may be varied by means of a metallic sleeve located between the Yoke and the Picture Tube neck. Adjust sleeve in or out of the yoke for a picture slightly larger than necessary to fill the screen.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Set the Horizontal Hold to center of its range and adjust the Horizontal Balance until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Discriminator Secondary (A10) located on top of chassis.

FUSE

One fuse is used for low voltage supply protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered. In addition, a Horizontal Centering Control is provided.(See tube placement chart for location.)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H654

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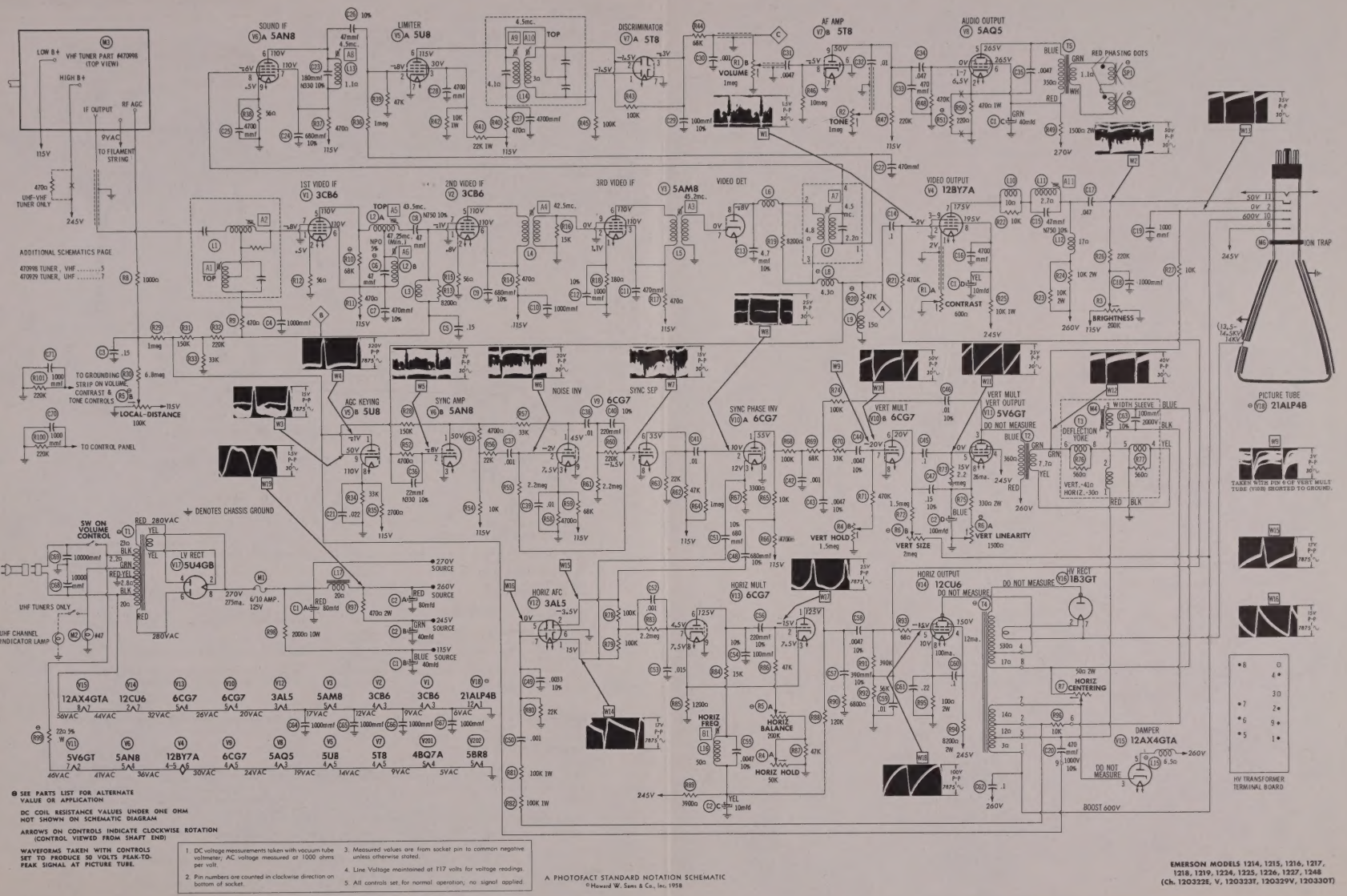
SET 410 FOLDER 1

EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219, 1224, 1225, 1226, 1227, 1248 (Ch. 120322E, V, 120323T, 120329V, 120330T)

EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219, 1224, 1225, 1226, 1227, 1248 (Ch. 120322E, V, 120323T, 120329V, 120330T)

SET 410 FOLDER 1



❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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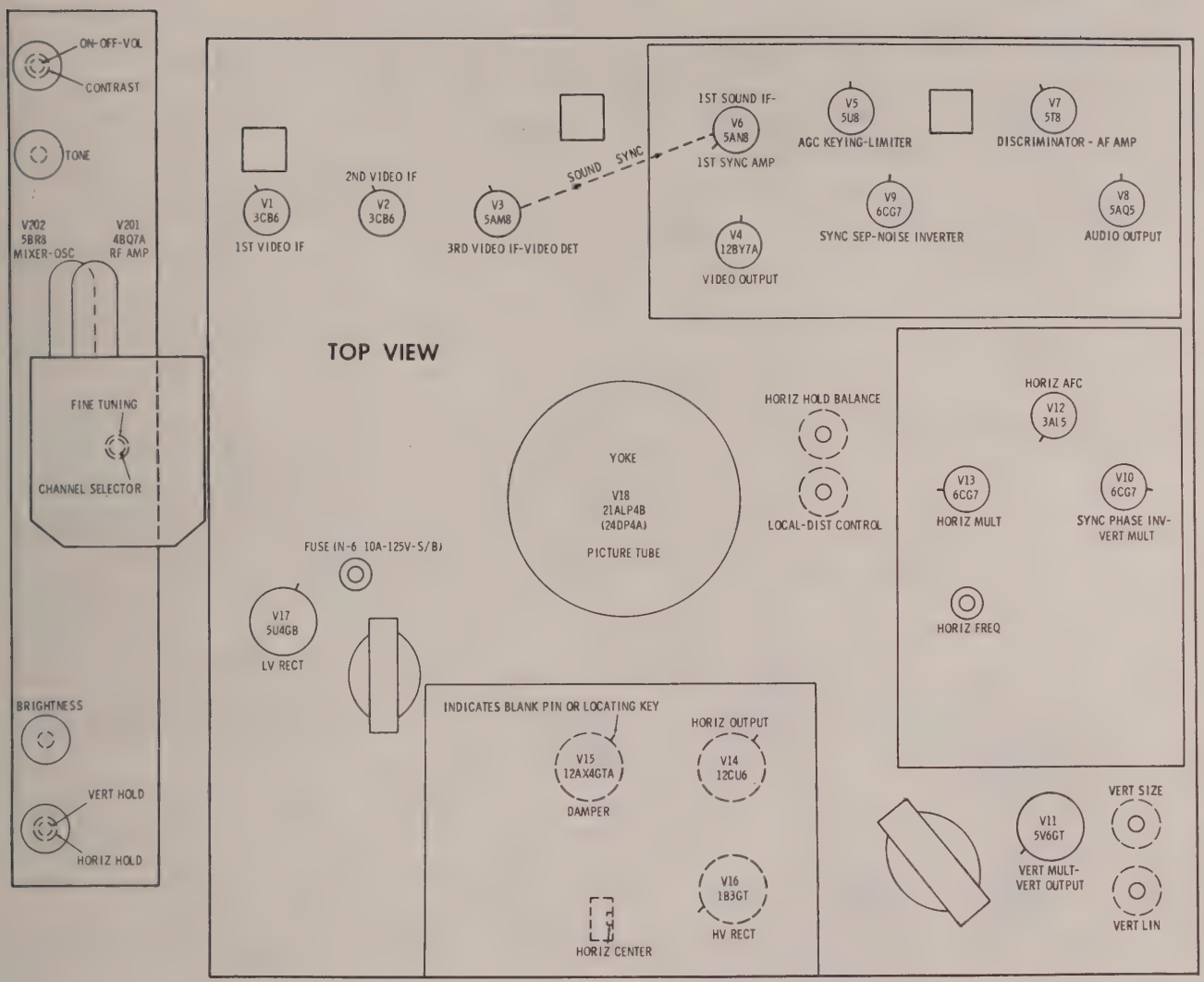
EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219, 1224, 1225, 1226, 1227, 1248 (Ch. 120322E, V, 120323T, 120329V, 120330T)

EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219, 1224, 1225, 1226, 1227, 1248 (Ch. 120322E, V, 120323T, 120329V, 120330T)

FOLDER 1

TUBE PLACEMENT CHART



EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219, 1224, 1225, 1226, 1227, 1248 (ch. 120322E, V, 120323T, 120329V, 120330T)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

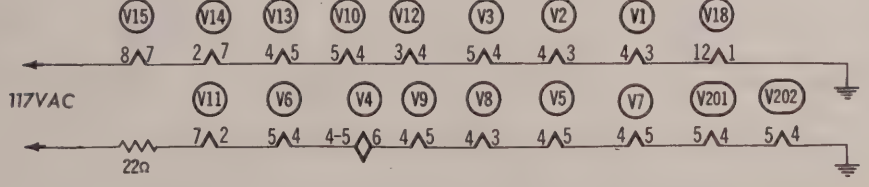
POWER SUPPLY FAILURE
No raster, no sound — Fuse (M1), V17

SWEEP FAILURE
No raster, has sound — V12, V13, V14, V15, V16, V18
No vertical deflection — V10, V11
Poor vert. linearity or foldover — V10, V11
Poor horiz. linearity or foldover — V13, V14, V15
Narrow picture — V13, V14, V15, V17
Vert. off freq. — V10, V11
Horiz. off freq. — V13

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster — V1, V2, V3,
No pic, no sound, has snow — V201, V202, V1
No pic, has sound, has raster — V4, V18
Has pic, no sound — V5, V6, V7, V8
Overloaded picture — V5

SYNC FAILURE
No vert. sync — V6, V9, V10
No horiz. sync — V6, V9, V10, V12
No vert. or horiz. sync — V6, V9, V10

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Set "Local-Distant" control (R5B) fully counterclockwise.
Short pin 1 (grid) of the 3CB6 (V2) to chassis for steps 1, 2 and 3 below.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.0MC (10MC Swp)	45.0MC	Any non-interfering channel	Vert. Amp. thru detector probe to pin 5 (plate) of 3CB6 (V1). Low side to chassis.	Mixer Plate Coil	Adjust for maximum gain at marker. Use only enough sweep generator output to provide a usable pattern on scope.
2.	"	"	"	41.25MC	"	"	A1	Adjust to place marker in trap notch.
3.	"	"	"	42.6MC 45.0MC	"	"	A2	Adjust for flat response similar to Fig. 1.
4.	1500mmf Ceramic Capacitor	High side to pin 1 (grid) of 3CB6 (V1). Low side to chassis.	Not used	45.2MC	"	USE VTVM. DC probe to point (A). Common to chassis. (Across Video Detector load).	A3	Connect the negative lead of a 3 volt bias supply to point (B). Positive to chassis. Remove short from pin 1 of V2. Adjust generator output to maintain no more than 2 volts at all times. Adjust A3 for maximum deflection. If two peaks occur, use one with the slug furthest counterclockwise.
5.	"	"	"	42.5MC	"	"	A4	Adjust for maximum deflection.
6.	"	"	"	43.5MC	"	"	A5	Preset A6 so that slug is all the way out of the coil. Adjust A5 for maximum deflection.
7.	"	"	"	47.25MC	"	"	A6	Adjust for MINIMUM deflection.
8.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.0MC (10MC Swp)	41.25MC 42.0MC 45.0MC 45.75MC	"	Vert. Amp. thru 20K to point (A). Low side to chassis. (Across Video Det. load)		Check for response similar to Fig. 2. If necessary, retouch A3 to position 45.75 MC marker, A2 for correct tilt and A4 for proper bandwidth.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01mfd	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (C). Common to chassis.	A7, A8, A9	Detune A10 for maximum negative deflection. Adjust A7, A8 and A9 for maximum deflection.
10.	"	"	"	"	"	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

4.5MC TRAP ALIGNMENT

4.5MC beat interference may be eliminated by adjusting the Fine Tuning until a beat pattern is visible in the picture. Adjust A11 for MINIMUM beat interference.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

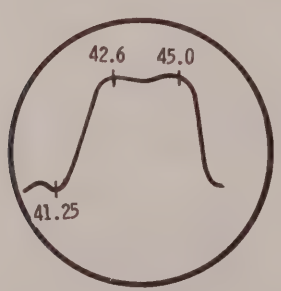


FIG.1

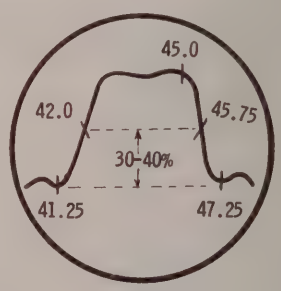
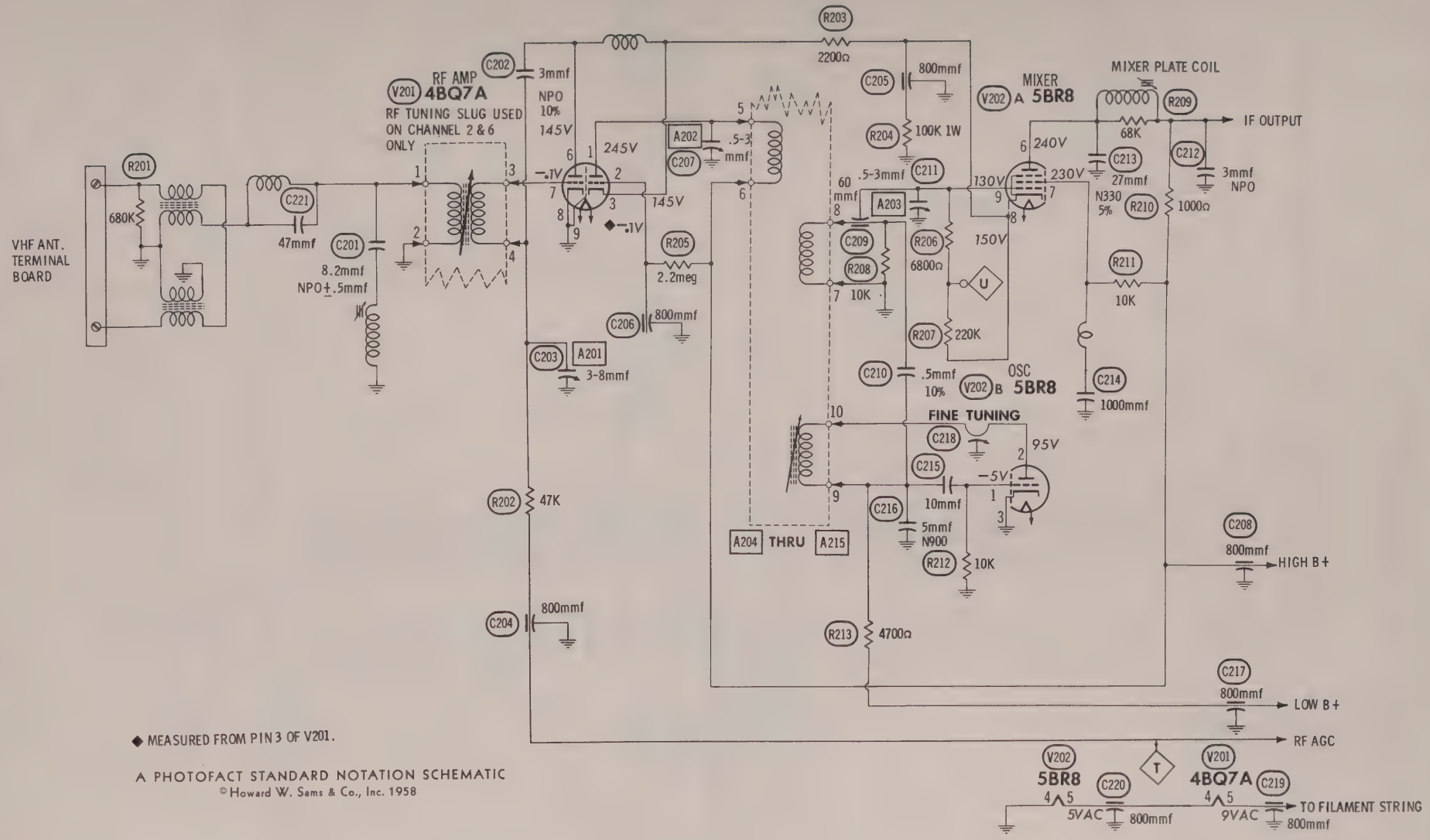


FIG. 2



VHF TUNER #470998

EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219, 1224, 1225, 1226, 1227, 1248 (Ch. 120322E, V, 120323T, 120329V, 120330T)

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC	205.25MC 209.75MC	12	Vert. Amp. thru 10K to point (U). Low side to chassis.	A201, A202, A203	Adjust for response curve similar to Fig. 201 with markers above 90%.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustments of A201, A202 and A203 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

VHF OSCILLATOR ALIGNMENT

Leave bias connect as under RF and Mixer Alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection .
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise designated.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K Across Video Det. load.	A204	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

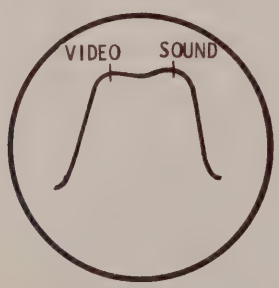


FIG. 201

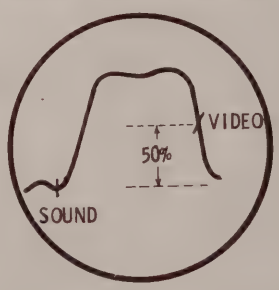
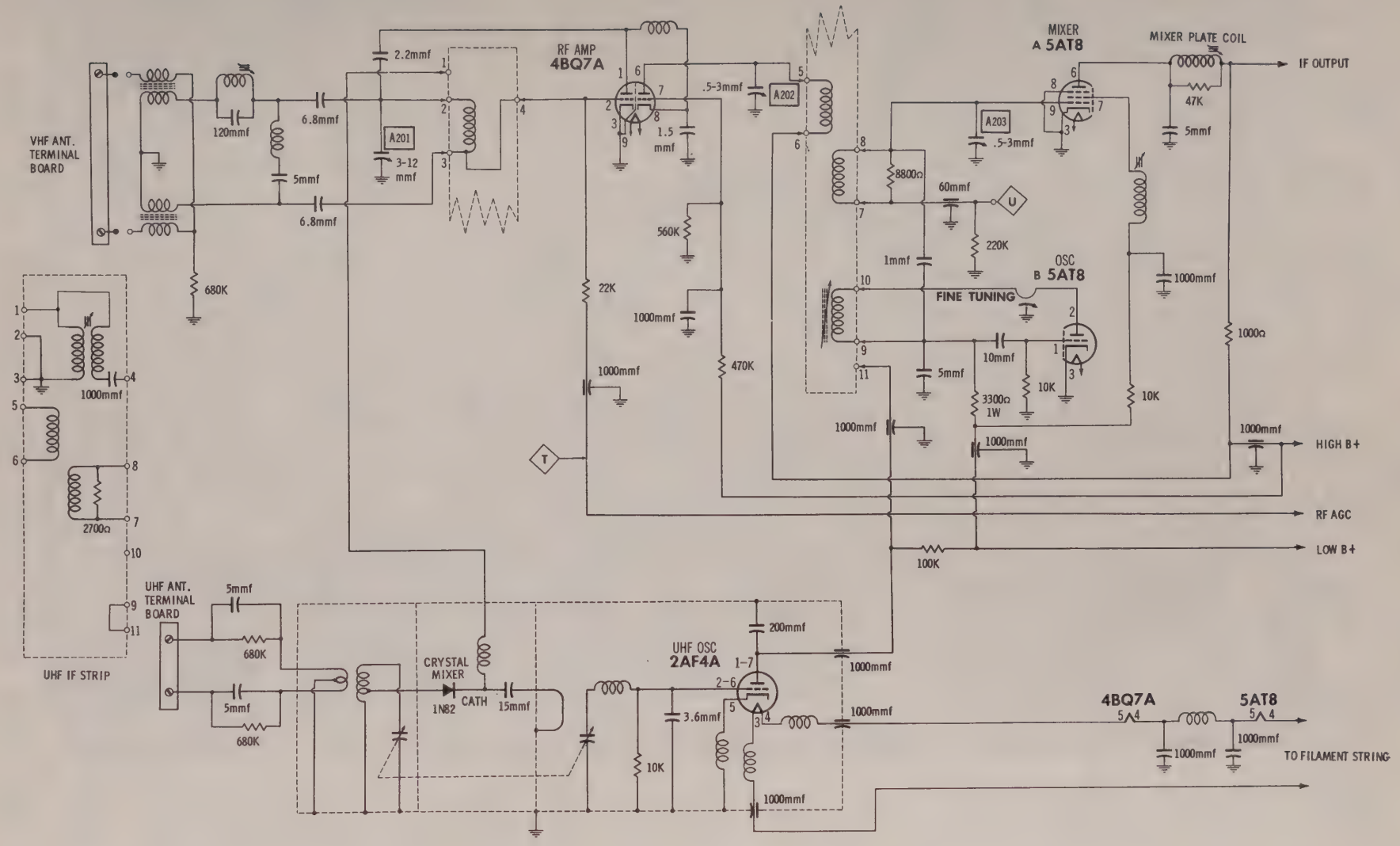
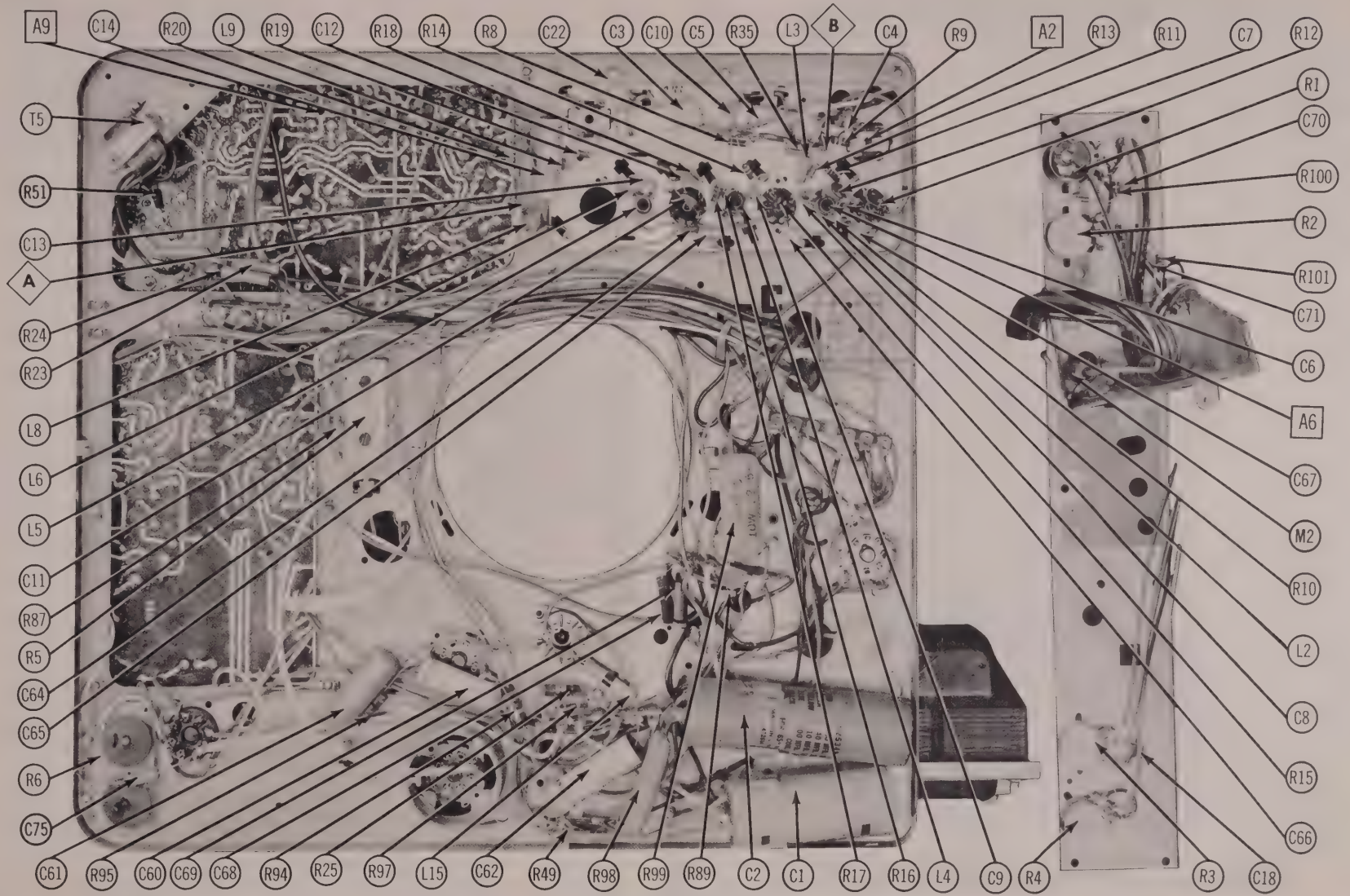


FIG. 202

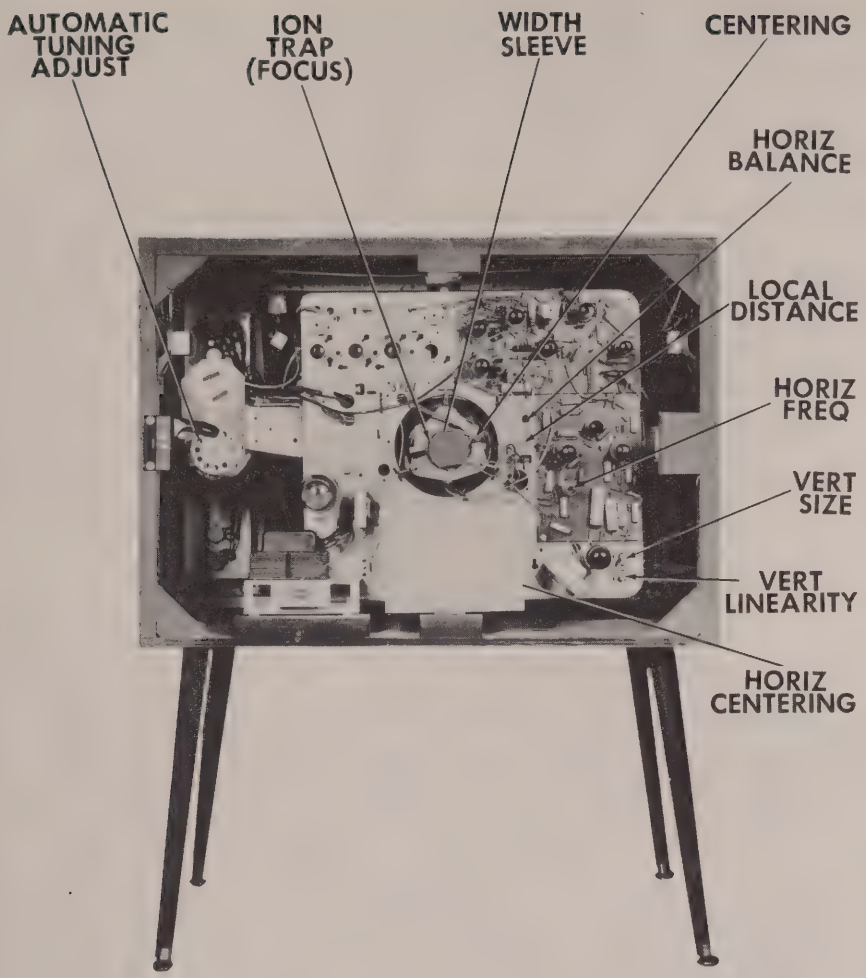


UHF-VHF TUNER #470929

EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219, 1224, 1225, 1226, 1227, 1248 (Ch. 120322E, V, 120323T, 120329V, 120330T)



CHASSIS BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a good TV signal and turn Local-Distant Control just below overload.

Place a jumper across C55 which is in parallel with the Horizontal Frequency Coil. Connect a clip lead from pin 7 (grid) of the Horizontal Multivibrator (V13) to chassis.

Set the Horizontal Hold to the center of its range.

Adjust the Horizontal Balance (R5A) until the picture falls into sync (it may sway back and forth).

Remove the short from C55 and adjust the Horizontal Frequency slug (B1) for same sync condition as in preceding step.

Remove the short from the grid. The picture should be in sync.

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st Video IF Amp.	3CB6	
V2	2nd. Video IF Amp.	3CB6	
V3	3rd. Video IF Amp. - Video Det	5AM8	
V4	Video Output	12BY7A	
V5	AGC Keying-Limiter	5U8	
V6	1st. Sound IF Amp. - 1st Sync Amp.	5AN8	
V7	Discriminator-AF Amp.	6T8	
V8	Audio Output	5AQ5	
V9	Sync Sep. -Noise Inv.	6CG7	
V10	Sync Phase Inv. - Vert. Mult.	6CG7	
V11	Vert. Mult. -Vert. Output	5V6GT	
V12	Horiz. AFC	3AL5	
V13	Horiz. Mult.	6CG7	
V14	Horiz. Output	12CU6	
V15	Damper	12AX4GTA	
V16	HV Rect.	1B3GT	
V17	LV Rect.	5U4GB	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	EMERSON PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V18	21ALP4B	21ALP4B/ 21ALP4A ①	21ALP4-B/ 21ALP4-A ②	21ALP4A/ 21ALP4B ③	①"Aluminized" ②"Silverama" ③"Silver Screen 85"
	24DP4A	24DP4-A/ 24YP4 ②	24DP4-A/ 24YP4 ②	24DP4A/ 24YP4 ③	

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP	VOLT	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	300	925340	PR4-800	BBRQ0926.5	WQ410		Q-01 MT-4510	TVA-4708
B	40	250							
C	40	300							
D	10	300							
C2A	80	300	925349	PR4-700	BBRQ0805	WQ650		Q-191 MTD-4510	TVA-4659
B	40	300							
C	10	300							
D	100	50							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.15	200	924321	P288N-15		CUB2P15	GEM-2015	2TM-P15	
C4	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C5	.15	200	924321	P288N-15		CUB2P15	GEM-2015	2TM-P15	
C6	47				TCZ-47				NPO 5% ①
C7	470		928907		MD-471				10%
C8	47		928895	N750-DI 47	DTN-47	C1OQ47U	NT-5447	5TCU-Q47	N750 10%
C9	680		928909		MD-681				10%
C10	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C11	470		928907	BPD-00047	DD-471	L10T47	UC-5347	5GA-T47	
C12	1000		928911						10%
C13	4.7		928312	NPO-SI 4.7	TCZ-4R7	CTA5Y47C	Z7-5447	5TCCB-Y47	10%
C14	.1	200	924315	P288N-1	DF-104	CUB3P1	GEM-301	2TM-P1	
C15	47			N750-DI 47	DTN-47	C1OQ47U	NT-5447	5TCU-Q47	N750 10%
C16	4700		928923	BPD-0047	DD-472	BYA10D47M	UC-5347	5HK-D47	
C17	.047	400	924554	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C18	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C19	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C20	470	1000	911478		MD-471				10%
C21	.022	400	924524	P488N-022		CUB4S22	GEM-4122	4TM-S22	
C22	470		928916	BPD-00047	DD-471	L10T47	UC-5347	5GA-T47	
C23	180		928865						N330 10%
C24	680		928909		MD-681				10%
C25	4700		928923	BPD-0047	DD-472	BYA10D47M	UC-5347	5HK-D47	
C26	47		928895	1469-000047	DD-470	32RS047	MS-447	1GM-S47	
C27	4700		928923	BPD-0047	DD-472	BYA10D47M	UC-5347	5HK-D47	10%
C28	4700		928923	BPD-0047	DD-472	BYA10D47M	UC-5347	5HK-D47	
C29	100		928897	NPO-DI 100	DD-101	L10T1	ET-531	5TCU-T1	10%
C30	.001	400	924513	P488N-001	DS-102	CUB6D1	GEM-421	6TM-D1	
C31	.0047	400	924553	P488N-0047	DS-472	CUB6D47	GEM-6247	6TM-D47	
C32	.01	400	924514	P488N-01	DS-103	CUB6S1	GEM-611	6TM-S1	
C33	470		928916	BPD-00047	DD-471	L10T47	UC-5347	5GA-T47	
C34	.047	400	924554	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C35	.0047	600	924753	P688N-0047	DS-472	CUB6D47	GEM-6247	6TM-D47	
C36	22		928857						
C37	.001	400	924513	P488N-001	DS-102	CUB6D1	GEM-421	6TM-D1	
C38	.01	400	924514	P488N-01	DF-103	CUB4S1	GEM-411	4TM-S1	
C39	.01	400	924514	P488N-01	DF-103	CUB4S1	GEM-411	4TM-S1	
C40	220		911166	1469-00022	MD-221	32RS722		MS-322	10%
C41	.01	400	924514	P488N-01	DS-103	CUB4S1	GEM-411	4TM-S1	
C42	.001	400	924513	P488N-001	DS-102	CUB6D1	GEM-421	6TM-D1	
C43	.0047	400	924553				GEM-16247		10%
C44	.0047	400	924453				GEM-16247		10%
C45	.1	400	924515	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C46	.01	600	924514				GEM-1611		10%
C47	.15	400	924421						10%
C48	680		911171	1464-00088	MD-681	1R5T68		MS-368	10%
C49	.0033	400	924433				GEM-16233		10%
C50	.001	400	924513	P488N-001	DS-102	CUB6D1	GEM-1621	6TM-D1	
C51	680		911171	1464-00068	MD-681	1R5T68		MS-368	10%
C52	.001	400	924513	P488N-001	DS-102	CUB6D1	GEM-421	6TM-D1	
C53	.015	200	924320	P288N-015		CUB6S15	GEM-4115	4TM-S15	
C54	100		911161	1469-0001	DD-101	32RS71	MCB225	MS-31	10%
C55	.0047	600	924653				GEM-16347		10%
C56	220		911165	1469-00022	MD-221	32RS722		MS-322	10%
C57	390		911168	1469-00039	MD-391	5R5T39		MS-339	10%
C58	.0047	400	924453				GEM-16347		10%
C59	.01	200	924314	P288N-01	DS-103	CUB4S1	GEM-411	4TM-S1	
C60	.1	400	924515	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C61	.22	200	924325	P288N-22		CUB2P22	GEM-3022	2TM-P22	
C62	.1	600	924715	P688N-1	DF-104	CUB5P1	GEM-501	6TM-P1	
C63	100	2000	928932						10%
C64	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C65	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C66	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C67	1000		928933	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C68	10000	400	922201	1467-01	DD-103		MC475		
C69	10000	400	922201	1467-01	DD-103		MC475		
C70	1000		928927	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C71	1000		928927	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	

① Not used in some versions.

PARTS LIST AND DESCRIPTIONS

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500Ω	½	390435	F3-3	RTV-666			Contrast
B	1meg	½		R2-53	Not Req.		■ UE3849	Volume
C	Switch			KB-1 or KB-4 *	Not Req.			
R2A	1meg	½	390434	B-70	A47-1meg-Z	Q13-137	U53	Tone
B	Shaft			Not Req.	FS-3	Not Req	U43	
R3A	200K	½	390436	B-46	A47-200K-B	Q11-139	U43	Brightness
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	50K	½	390437	F1-39	RTV-651		▪ UE3841	Horiz. Hold
B	1.5meg	½		R2-54	Not Req.			Vert. Hold
R5A	200K	½	390431					Horiz. Balance, Note 1
B	100K	½						Local-Distant, Note 1
	200K	½	390243	AB-46	A47-200K-B	Q11-139	TA254L	Horiz. Balance, Note 1
	Shaft			AK-19	RN-3	TQ	Not Req.	
	100K	½	390287	AB-40	A47-100K-B	Q11-138	PTA10L	Local-Distant, Note 1
	Shaft			AK-19	RN-3	TQ	Not Req.	
R6A	1500Ω	½	390411					Vert. Lin., Note 1
B	2meg	½						Vert. Size, Note 1
	1500Ω	½	390343	AB-6	A47-1500-B	Q11-109	PTA150L	Vert. Lin., Note 1
	Shaft			AK-19	RN-3	TQ	Not Req.	
	2meg	½	390275	AB-78	A47-2meg-B	Q11-139	PTA20L	Vert. Size, Note 1
	Shaft			AK-19	RN-3	TQ	Not Req.	
R7	50Ω	2		39-50			FL-75	Horiz. Center

* Use KB-1 on CBL "red label" controls and KB-1 on "blue label" controls.
■ "STA-LOC" Equivalent : FD8R, OF250, RU8A, B2812, 1841.
• "STA-LOC" Equivalent : FC54L, OF218T, RU165I, B2750.
Note 1. Some versions use individual controls in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		EMERSON PART No.	NOTES
	OHMS	WATT		
R8	1000Ω		350492	
R9	470Ω		350412	
R10	68K			Note 1
R11	470Ω		350412	
R12	56Ω		340192	
R13	8200Ω		340732	
R14	470Ω		350412	
R15	56Ω		340192	
R16	15K		340772	
R17	470Ω		350412	
R18	180Ω		340312	
R19	8200Ω		340732	
R20	47K-			Note 2
R21	470K		351132	
R22	10K	2	780732	
R23	10K	1	370732	
R24	10K	2	780732	
R25	10K	1	370732	
R26	220K		351052	
R27	10K		350732	
R28	150K		340812	
R29	1meg		341212	
R30	6.8meg		341412	
R31	150K		340812	
R32	220K		341052	
R33	33K		340852	
R34	33K		340852	
R35	2700Ω		340592	
R36	1meg		351212	
R37	470Ω		350412	
R38	56Ω		340192	
R39	47K		340892	
R40	470Ω		350412	
R41	22K	1	370812	
R42	10K	1	370732	
R43	680K		340852	
R44	68K		350932	
R45	100K		340972	
R46	10meg		351652	
R47	220K		351052	
R48	470K		351132	
R49	1500Ω	2	780532	
R50	470Ω	1	370412	
R51	220Ω			Note 1
R52	4700Ω		340652	
R53	4700Ω		340652	
R54	10K		340732	

ITEM No.	RATING		EMERSON PART No.	NOTES
	OHMS	WATT		
R55	2.2meg		351292	
R56	22K		340812	
R57	33K		340852	
R58	4700Ω		340652	
R59	68K		340932	
R60	220K		351052	
R61	2.2meg		351292	
R62	47K		340892	
R63	22K		340812	
R64	1meg		351212	
R65	10K		340732	
R66	4700Ω		340652	
R67	3300Ω		340612	
R68	100K		340972	
R69	68K		340932	
R70	33K		340852	
R71	470K		341152	
R72	1.5meg		341252	
R73	2.2meg		351292	
R74	100K		340972	
R75	330Ω	2	370772	
R76	560Ω		340432	
R77	560Ω		340432	
R78	100K		340972	
R79	100K		340972	
R80	22K		340812	
R81	100K	1	370972	
R82	100K	1	370972	
R83	2.2meg		351292	
R84	10K		340732	
R85	1200Ω		340512	
R86	47K		340892	
R87	47K		340892	
R88	120K		340992	
R89	3900Ω		340632	
R90	68000Ω		340692	
R91	390K		341112	
R92	56K		340912	
R93	68Ω		350212	
R94	8200Ω	2	780712	
R95	100Ω	2	780252	
R96	10K		340732	
R97	470Ω	2	780412	
R98	2000Ω	10	394129	
R99	220 5%	10	394173	Note 3
R100	220K		351057	
R101	220K		351057	

Note 1. Not used in some versions.
Note 2. Some versions may use 4700Ω in this application (Part #340652).
Note 3. Ch. 1303237, 1303307 use 18Ω 10W 5% in this application (Part #394174).

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
T1	510VCT @ 250A tap ② 117VCT @1.7A tap ③ 6.3VAC @ 2A	5VAC @2.9A		730064 ①						

① Alternate Part #730065.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA							NOTES
		EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No	Thordorson PART No.	Triad PART No.	
T2	Vert. Output	732121	22900 ①	A-3823	V307	A-8144	36872	A-108X	
T3A	Yoke-Horiz.(21MM)	705369	DF907	MDF-92	Y90T19/43	DY-16A	Y-16	Y-41 &	
B	(900)-Vert.(40MM)		①		③	②	②	NW8	
T4	Horiz. Output	732128 ②			X093 *	HO-296 *	FLY-143*	D-95 *	
	Horiz. Output	732129 ④			X093 *	HO-296 *	FLY-143*	D-96*	

① Use 8 : 1 turns ratio.
② Use original yoke damping network, if necessary. Cut and form a piece of .010 gauge fish paper inside the yoke itself and support with an acetate cement, to provide an insulation between the width sleeve and the yoke proper.
③ Includes R7.
④ Used in Ch. 1203237, 1303307. Includes R7.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordorson Replacement Connections	Triad Replacement Connections
	4		2	4	4	4	5
	8		1	8	8	8	4
	7		6	7	7	7	4
	2		4	2	2	2	YCT
	5		7	5	5	5	1
	1		5	1	1	1	A-
Special Notes →							⑤

⑤ Jumper terminals #1 and A + . Use Triad YC-1 (Yoke Rear Cover) for correct centering.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	
T5	4500Ω	8-8Ω	734134	Z1003 ①	A-2902 ①	AU-508 ①	A-3337 ①	24884 ①	S-53X ①	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V C. IMP.	EMERSON PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	180111 ①	4A07	① Used in Models 1216, 1217, 1218, 1219, 1234, 1235
SP2	4"	PM	3-4Ω	180111 ①	4A07	② Two used in Models 1214, 1215
	6"	PM	3-4Ω	180140 ②	6A1	③ Two used in Models 1236, 1227
	6"			180141 ③		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		EMERSON PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	1st. Video IF	730269					Includes 41.25MC Trap
L3	2nd. Video IF	730271					Includes 47.25MC Trap, R10, and C6.
L5	RF Choke	730236					13.5 Microhenries
L4	3rd. Video IF	730238	17-4523	TV-130 *	6319 *	VF-3 *	
L6	4th. Video IF	730231	17-4533	TV-130 *	6319 *	VF-3 *	
L7	RF Choke	705209	19-1003	SW-531	4606		4.6 Microhenries
L7A	4.5MC Trap	730246					
B	1st. Sound IF						
L8	RF Choke	705034	19-1004	BC-566	4610		6.8 Microhenries ①
L9	Shunt Peaking Coil	708343	19-3500	TV-203	6174	VP-8	500 Microhenries
L10	Series Peaking Coil	708272	19-3300	TV-190	6132	VP-7	330 Microhenries
L11	4.5MC Trap	708278					
L12	Shunt Peaking Coil	708279	19-3500	TV-203	6174	VP-8	500 Microhenries
L13	2nd. Sound IF	730243					
L14	Discriminator	708276					
L15	RF Choke	705021	19-1006	BC-566	4613		10 Microhenries ②

① IRC Part #CL-A. ② IRC Part #CL-2. * Drill new mounting hole.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	EMERSON PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordorson PART No.	
L16	50Ω		718103						

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~(.)	EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
L17	.180A	30Ω	.52 Hy.	737023	C5041 ①			F-801	C-3338 ①	36C92 ①	C-27X

① Drill new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			EMERSON PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	6/10A 125V 8/B	808015		333.600 (N-6/10A-125V-8/B)	348010	N 8/10	HN 1/2 to 3/4

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M2	Lamp	807000	#47
M3	Tuner	470998	VHF, Ch. 120322-V, 120329-V
	Tuner	470929	UHF-VHF, Ch. 120323-T, 120330-T
	Tuner	470928	UHF-VHF, Ch. 120323-T, 120330-T
M4	Width Sleeve		
M5	Centering Device	708277	
M6	Ion Trap	708129	
	Printed Board	630171	Sync, Osc.
	Printed Board	630172	Sound, Video

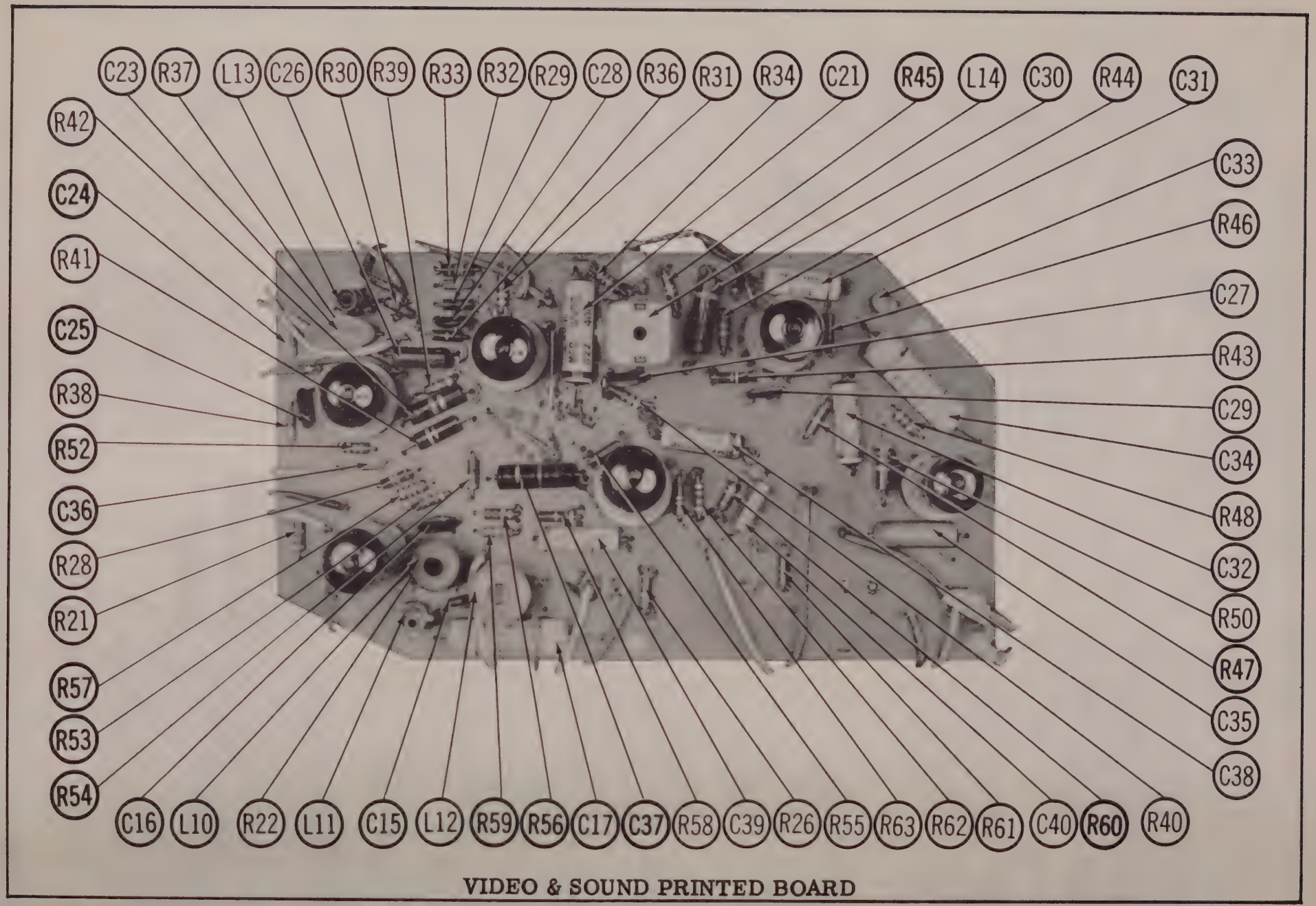
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	520246	Models 1214, 1215, 1216, 1217, 1218, 1219
Safety Glass	520232	Models 1224, 1225, 1226, 1227
Mask	460688E	Green, Models 1224, 1225, 1226, 1227
Knob	460692	Fine Tuning, Models 1215, 1217, 1219, 1225, 1227
Knob	460765	Fine Tuning, Models 1214, 1216, 1218, 1224, 1226
Knob	460764	Channel Selector, Models 1214, 1216, 1218, 1224, 1226
Knob	460690B	VHF Channel Selector, Models 1215, 1217, 1219, 1225, 1227
Knob	460691B	UHF Channel Selector, Models 1215, 1217, 1219, 1225, 1227
Knob	460766	On-Off-Volume, Vert. Hold
Knob	460767	Contrast, Horiz. Hold
Knob	460768	Tone, Brightness
Dial	460756	VHF, Models 1214, 1216, 1218, 1224, 1226
Dial	460757	VHF, Models 1215, 1217, 1219, 1225, 1227
Dial	460758	UHF, Models 1215, 1217, 1219, 1225, 1227
Cabinet	140778	Mahogany, Models 1216, 1217
Cabinet	140778A	Blond, Models 1216, 1217
Cabinet	140778B	Walnut, Models 1216, 1217
Cabinet	140800A	Blond, Consolette, Models 1224, 1225
Cabinet	140800B	Walnut, Consolette, Models 1224, 1225
Cabinet	140801	Mahogany, Console, Models 1226, 1227
Cabinet	140801A	Blond, Console, Models 1226, 1227
Cabinet	140801B	Walnut, Console, Models 1226, 1227
Leg	620275	Mahogany, Models 1216, 1217, 1224, 1225
Leg	620275A	Blond, Models 1216, 1217, 1224, 1225
Leg	620275B	Walnut, Models 1216, 1217, 1224, 1225
Leg	412546	Brass, Models 1218, 1219

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



VIDEO & SOUND PRINTED BOARD

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	4BQ7A	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5BR8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

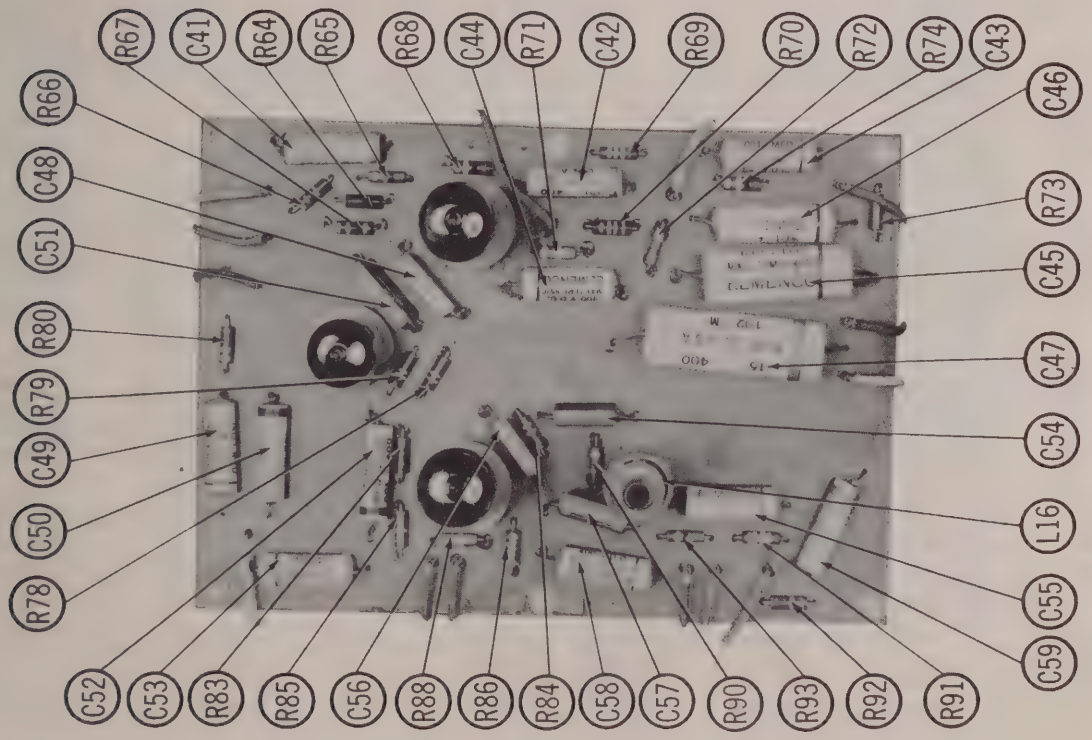
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	8.2			NPO-DI 8.2		C10V82C			NPO ± .5mmf
C202	3			NPO-DI 3		C10V3C	ZT-553		NPO 10%
C203	3-8								
C204	800								
C205	800								
C206	800								
C207	.5-3				829.3		CT565A		
C208	800								
C209	60								
C210	.5			NPO-SI .5	TCZ-R5				10%
C211	.5-3				829-3		CT565A		
C212	3			NPO-DI 3		C10V3C	ZT-553		NPO
C213	27								N330 5%
C214	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C215	10			BPD-00001	DD-100	L10Q1	UC-541	5GA-Q1	
C216	5								N900
C217	800								
C218									
C219	800								
C220	800								
C221	47			NPO-DI 47	DD-470	L10Q47		5TCC-Q47	10%

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		EMERSON PART No.	NOTES
	OHMS	WATT		
R201	680K			
R202	47K			
R203	2200Ω			
R204	100K	1		
R205	2.2meg			
R206	6800Ω			
R207	220K			

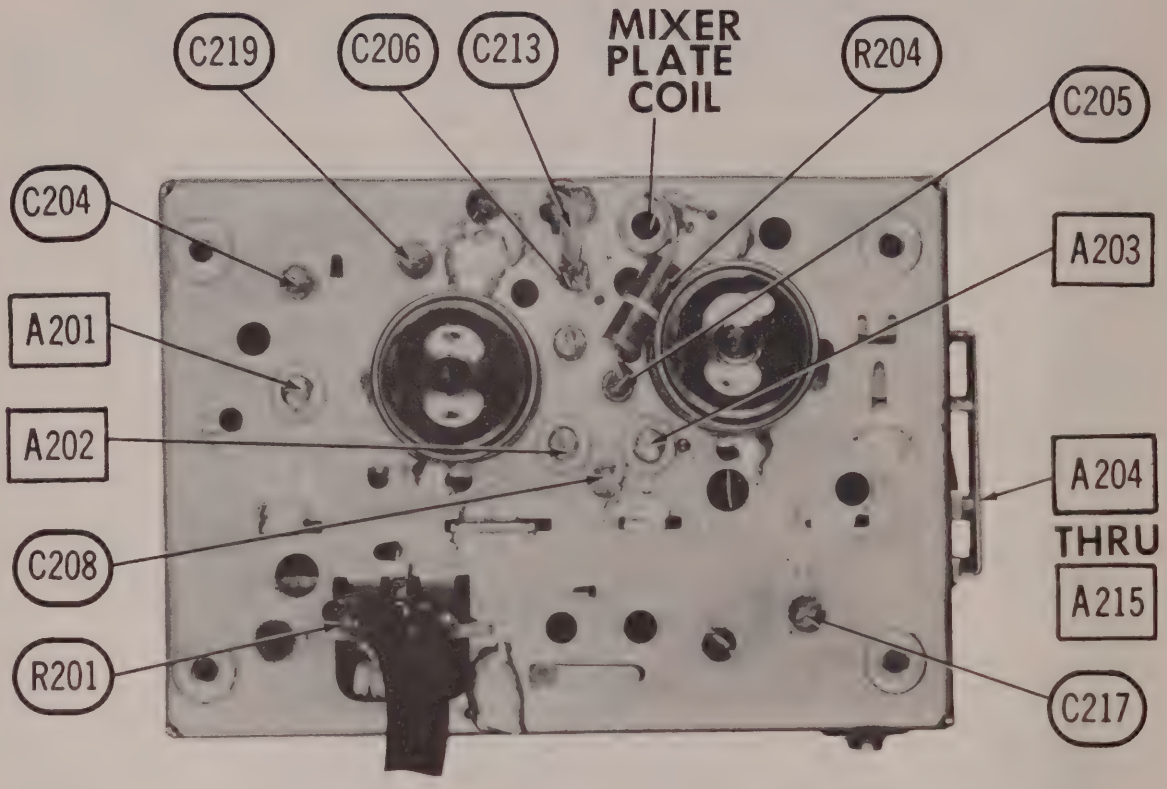
ITEM No.	RATING		EMERSON PART No.	NOTES
	OHMS	WATT		
R208	10K			
R209	68K			
R210	1000Ω			
R211	10K			
R212	10K			
R213	4700Ω			



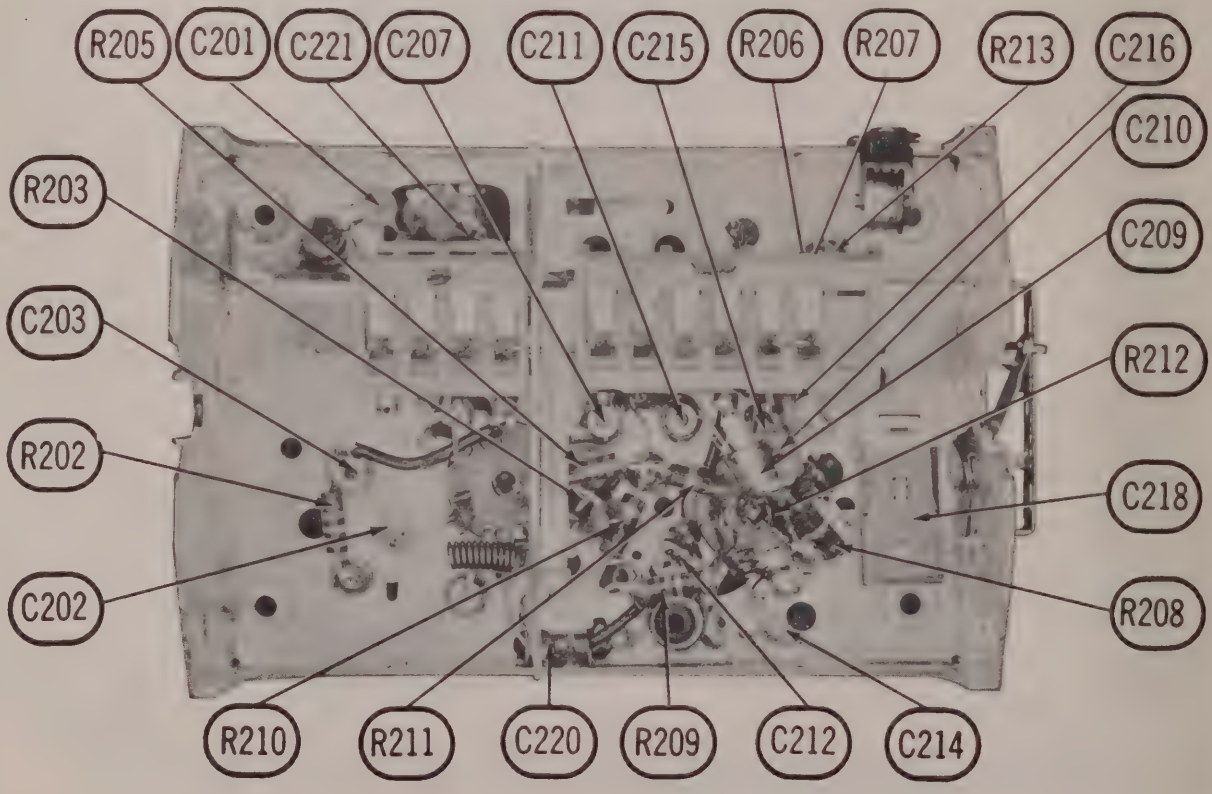
SWEEP PRINTED BOARD

EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219, 1224, 1225, 1226, 1227, 1248 (Ch. 120322E, V, 120323T, 120329V, 120330T)

FOLDER 1



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW

CHASSIS TOP VIEW

EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219, 1224, 1225, 1226, 1227, 1248 (Ch. 120322E, V, 120323T, 120329V, 120330T)

FOLDER 1

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3CB6	250K	56Ω	1.5Ω	2Ω	†2500Ω	†2500Ω	0Ω		
V2	3CB6	250K	56Ω	2Ω	2.5Ω	†2500Ω	†2500Ω	0Ω		
V3	5AM8	180Ω	.1Ω	†2500Ω	2.5Ω	.3Ω	†2500Ω	.1Ω	48K	0Ω
V4	12BY7A	•170Ω	520K	0Ω	7.5Ω	7.5Ω	7Ω	†5000Ω	†10K	0Ω
V5	5U8	170K	47K	†12K	5.5Ω	4.5Ω	†2500Ω	0Ω	†4500Ω	†150K
V6	5AN8	†15K	52K	0Ω	7.5Ω	7.7Ω	†2500Ω	†2500Ω	1meg	56Ω
V7	5T8	80K	80K	150K	4.5Ω	3Ω	0Ω	0Ω	10meg	†220K
V8	5AQ5	470K	130Ω	5.5Ω	6Ω	†1900Ω	†1500Ω	470K		
V9	6CG7	†49K	4.6meg	4700Ω	7Ω	6Ω	†20K	2.4meg	0Ω	0Ω
V10	6CG7	†17K	†1meg	3300Ω	3.5Ω	4Ω	•‡3meg	• 700K	0Ω	0Ω
V11	5V6GT	NC	7.7Ω	†380Ω	†490Ω	2.2meg	NC	8Ω	• 550Ω	
V12	3AL5	INF	INF	3.7Ω	3Ω	22K	0Ω	22K		
V13	6CG7	†120K	• 140K	1200Ω	3.7Ω	3.5Ω	†20K	INF	1200Ω	0Ω
V14	12CU6	NC	3.5Ω	NC	†8700Ω	450K	NC	3.2Ω	100Ω	TOP CAP •‡ 40Ω
V15	12AX4GTA	NC	NC	INF	NC	†26.5Ω	NC	3.2Ω	2Ω	
V16	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP • ‡550Ω
V17	5U4GB	NC	¶	NC	22.8Ω	NC	25.2Ω	NC	¶	
V18	21ALP4B	0Ω	10K	Pin 6 †490Ω	Pin 10 ‡20Ω	Pin 11 250K	Pin 12 1.5Ω			
V201	4BQ7A	†500Ω	†2.2meg	100K	1.5Ω	3Ω	100K	1meg	0Ω	0Ω
V202	5BR8	10K	†6700Ω	0Ω	0Ω	1.5Ω	†1500Ω	†10K	100K	325K
ITEM	TYPE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

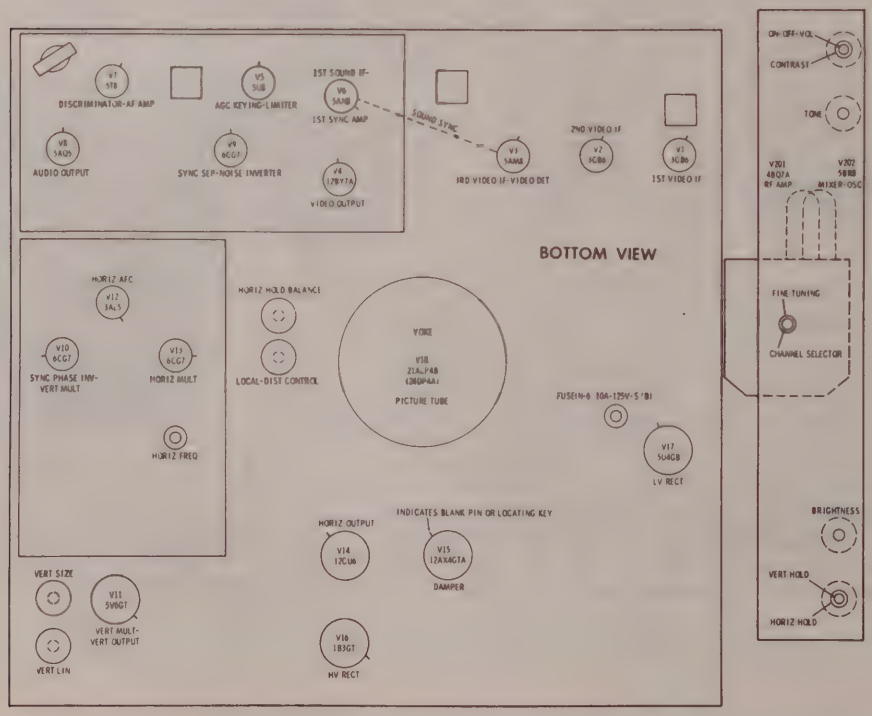
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM 270V SOURCE.

‡ MEASURED FROM PIN 3 OF V15.

NC NO CONNECTION.

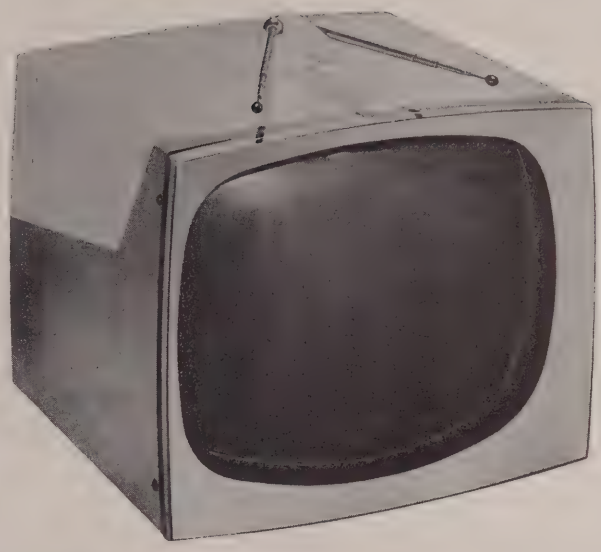


TUBE PLACEMENT CHART

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type knobs from the side.
2. Remove 5 metal screws from the rear cover. Remove the rear cover.
3. Remove 2 metal screws holding the AC interlock.
4. Remove the speaker leads, picture tube socket and yoke leads.
5. Remove 2 hex nuts holding the speaker. Remove the speaker.
6. Remove 2 metal screws holding the chassis at the top.
7. Remove 2 chassis bolts from the bottom.
8. Partially remove the chassis. Remove the HV lead and remove the chassis.



CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Trans American MODEL MJ178PV
SUPPLIER	Marshall Wells, Duluth 1, Minn.
TYPE SET	Television Receiver
TUBES	Thirteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 130 Watts, 1.2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the rear cover, and supplying power to the receiver. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, thru a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

1. Follow steps 2 and 4 of "Chassis Removal".
2. Remove the front handle bolt and 5 metal screws holding the front to the cabinet.
3. Partially remove the front, remove the HV lead, and remove the front.
4. Loosen picture tube mounting strap bolt and remove the picture tube.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pin 6 and 10 or 6 and 2.

HORIZONTAL OSCILLATOR BUZZ ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

FUSE DEVICE

A 4.7Ω fusible resistor (R62) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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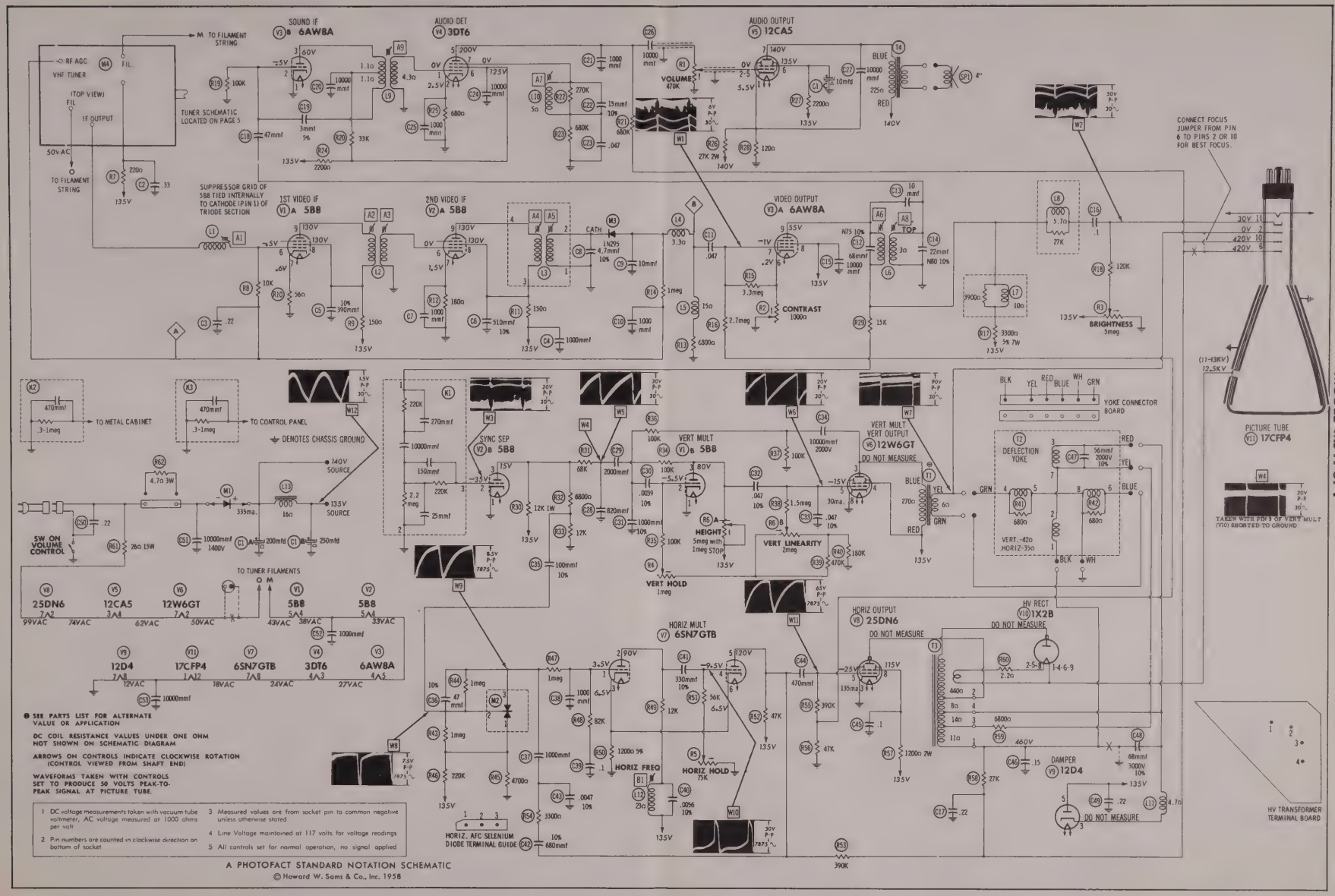
SOUND IF
V3 B 6AW8A
AUDIO DET
V4 3DT6
AUDIO OUTPUT
V5 12CA5
VOLUME 470K
1ST VIDEO IF
V1 A 5B8
2ND VIDEO IF
V2 A 5B8
VIDEO OUTPUT
V3 A 6AW8A
CONTRAST 1000a
BRIGHTNESS 5meg
SUPPRESSOR GRID OF 5B8 TIED INTERNALLY TO CATHODE (PIN 1) OF TRIODE SECTION
TUNER SCHEMATIC LOCATED ON PAGE 5
VHF TUNER
(TOP VIEW)
IF OUTPUT
TO FILAMENT STRING
50V AC
CONNECT FOCUS JUMPER FROM PIN 6 TO PINS 2 OR 10 FOR BEST FOCUS.
PICTURE TUBE
V11 17CFP4
TAKEN WITH PIN 3 OF VERT MULT (V10) SHORTED TO GROUND
YOKE CONNECTOR BOARD
BLK YEL RED BLUE WH GRN
DEFLECTION YOKE
VERT. -42a
HORIZ-35a
TO METAL CABINET
TO CONTROL PANEL
DENOTES CHASSIS GROUND
140V SOURCE
135V SOURCE
SW ON VOLUME CONTROL
TO TUNER FILAMENTS
SYNC SEP
V2 B 5B8
VERT MULT
V1 B 5B8
VERT MULT VERT OUTPUT
V6 12W6GT
DO NOT MEASURE
HEIGHT 5meg with 1meg STOP
VERT LINEARITY 2meg
VERT HOLD 1meg
HORIZ MULT
V7 6SN7GTB
HORIZ OUTPUT
V8 25DN6
DO NOT MEASURE
HV RECT
V10 1X2B
DO NOT MEASURE
HORIZ FREQ
HORIZ HOLD 75K
DAMPER
V9 12D4
DO NOT MEASURE
HV TRANSFORMER TERMINAL BOARD
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE
25DN6 7A2 99VAC
12CA5 3A4 74VAC
12W6GT 7A2 62VAC
5B8 5A4 50VAC
5B8 5A4 43VAC
5B8 5A4 38VAC
6AW8A 4A5 33VAC
12D4 7A8 12VAC
17CFP4 1A12 18VAC
6SN7GTB 7A8 24VAC
3DT6 4A3 27VAC
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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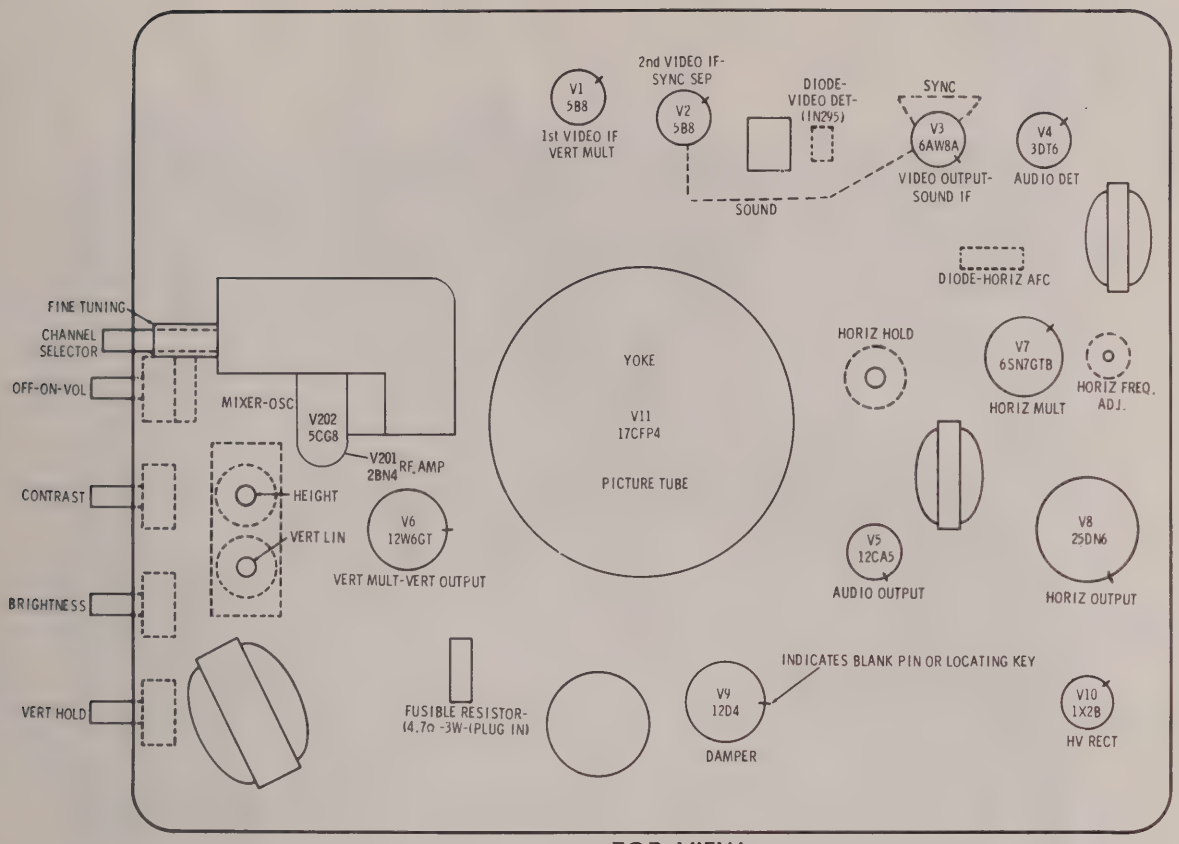
TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

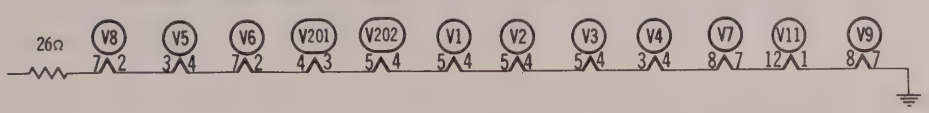
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R62), Rectifier (M1)**

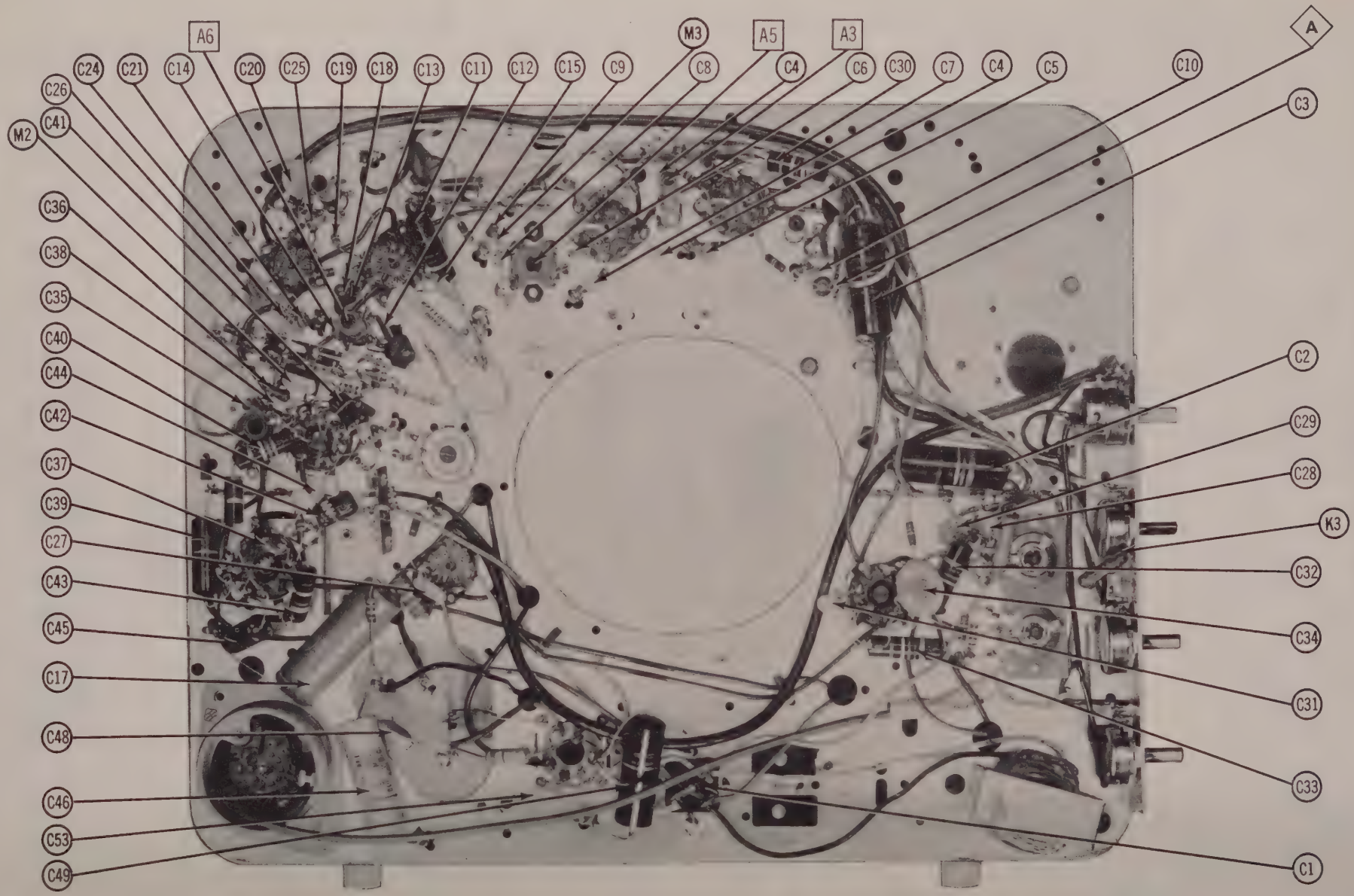
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, Diode (M3), V3**
No pic, no sound, has snow - **V201, V202**
No pic, has sound, has raster - **V3, V11**
Has pic, no sound - **V3, V4, V5**

SYNC FAILURE
No vert. sync - **V2**
No horiz. sync - **V2, Rectifier (M2)**
No vert. or horiz. sync - **V2**

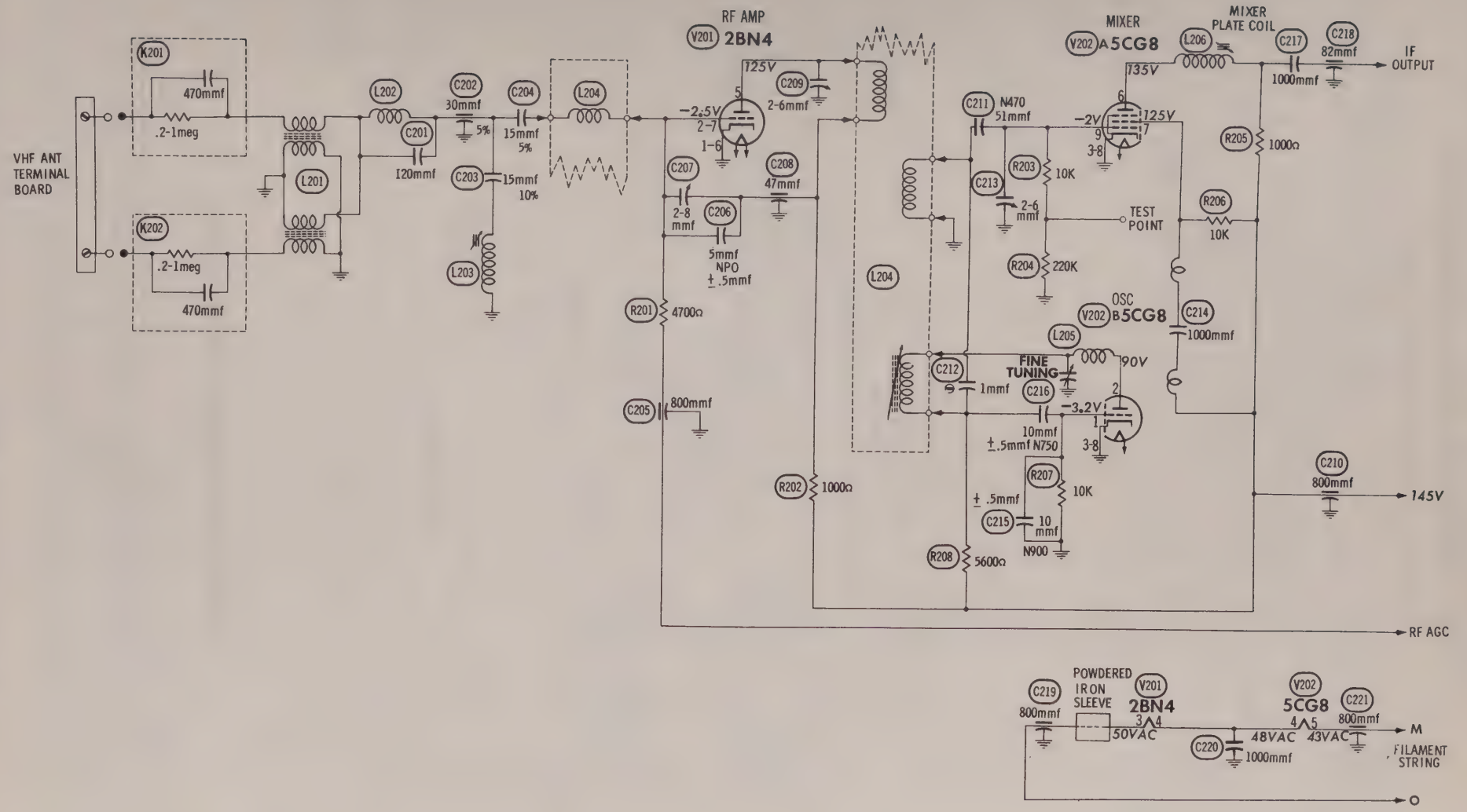
SWEEP FAILURE
No raster, has sound - **M2, V7, V8, V9, V10, V11**
No vertical deflection - **V1, V6**
Poor vert. linearity or foldover - **V1, V6**
Poor horiz. linearity or foldover - **V7, V8, V9**
Narrow picture - **V7, V8, V9, M1**
Vert. off freq. - **V1, V6**
Horiz. off freq. - **V9**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).





CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER #201-100148

TRANS AMERICAN
MODEL MJ178PV

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	TransAmerican PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		121-001521	DI-00012	DD-121	L10T12	ED-102	UC-5312	5GA-T12	
C202	30		121-001522							5%
C203	15		121-001523	NPO-DI 15	TCZ-15	C10Q15C	TCO-15	ZT-5415	5TCC-Q15	10%
C204	15		121-001524	NPO-DI 15	TCZ-15	C10Q15C	TCO-15	ZT-5415	5TCC-Q15	5%
C205	800		121-001525							
C206	5		121-001526	NPO-DI 5	TCZ-4R7		TCO-5			NPO ±.5mmf
C207	2-8		121-001536							
C208	47		121-001537							
C209	2-6		121-001527							
C210	800		121-001525							
C211	51		121-001528							N470
C212	1									①
C213	2-6		121-001527							
C214	1000		121-001658	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C215	10		121-001530							N900 ± .5mmf
C216	10		121-001532	N750-DI 10	TCN-10		TC7-10			N750 ± .5mmf
C217	1000		121-001533	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C218	82		121-001534							
C219	800		121-001525							
C220	1000		121-001533	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C221	800		121-001525							

① Some versions may use 1.5mmf ± .25mmf (Part #13D-111-6) in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Trans American PART No.	NOTES
	OHMS	WATT		
R201	4700Ω		451-253472	
R202	1000Ω		451-253102	
R203	10K		451-253103	
R204	220K		451-253224	

ITEM No.	RATING		Trans American PART No.	NOTES
	OHMS	WATT		
R205	1000Ω		451-253102	
R206	10K		251-253103	
R207	10K		451-253103	
R208	5600Ω		451-252562	

COILS (RF-IF)

ITEM No.	USE	Trans American PART No.	NOTES
L201	Ant. Trans.	121-001544	
L202	IF Trap Coil	121-001538	
L203	IF Trap Coil	121-001539	
L204	Coil Assy.	121-001540	Includes rotor

ITEM No.	USE	Trans American PART No.	NOTES
L205	RF Choke	121-001541	
L206	Mixer Plate Coil	121-001542	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Trans American PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .2-1meg	049-100072	Centralab Sprague	RC-471 R-9197
K202	Antenna Isolation	470mmf, .2-1meg	049-100072	Centralab Sprague	RC-471 R-9197

MISCELLANEOUS

ITEM No.	PART NAME	Trans American PART No.	NOTES
M201	Antenna Input Assy.	121-001556	Includes K201, K202, L201
	Shaft & Rotor Assy.	121-001662	Includes L204

TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

For adjustment of the oscillator adjustment slugs, it is necessary to remove the rear cover of the receiver. The slugs are reached thru a hole in the tuner rear cover at about 6 o'clock. The oscillator slugs are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Disable the tuner oscillator by replacing the oscillator tube (V202) with one having the oscillator grid pin removed.
Short the antenna terminals together but not to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	42.75MC 45.75MC	Any non-interfering channel	Vert. Amp. thru detector (Fig.1) to pin 9 (plate) of 5B8 (V1). Low side to chassis.	Mixer Plate Coil & A1	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
2.	1000mmf Ceramic Capacitor	High side to pin 6 (grid) of 5B8 (V1). Low side to chassis.	"	"	"	Vert. Amp. thru detector (Fig. 1) to pin 9 (plate) of 5B8 (V2). Low side to chassis.	A2, A3	"
3.	"	High side to pin 6 (grid) of 5B8 (V2). Low side to chassis.	"	"	"	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. (Across video det. load).	A4, A5	"
4.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	"	"	"	"		Retouch Mixer Plate Coil and A1 thru A5 as required for response similar to Fig. 3. Remove bias and replace V202 in its socket.

SOUND IF ALIGNMENT

Set the contrast control fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	1000mmf Ceramic Capacitor	High side to point Ⓑ. Low side to chassis.	Not used	4.5MC (400∿ 30% AM)	Any non-interfering channel	Vert. Amp. thru detector (Fig. 4) to pin 11 (cathode) of picture tube. Low side to chassis.	A6	Turn A6 and A8 almost out of coil forms. Then adjust A6 for MINIMUM scope indication.
6.	"	"	4.5MC (15KC Swp)	Not used	"	Across speaker voice coil	A7, A8, A9	Use only enough sweep generator output to provide a usable pattern on scope. Turn A7 fully clockwise, then counter clockwise for maximum scope indication. Adjust A8 and A9 for maximum scope indication. Remove test equipment and tune in a local TV station. Retouch A7 for MINIMUM buzz.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

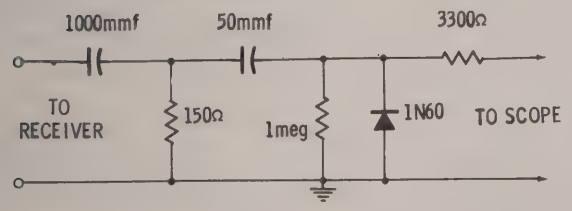


FIG. 1

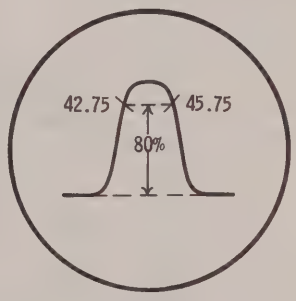


FIG. 2

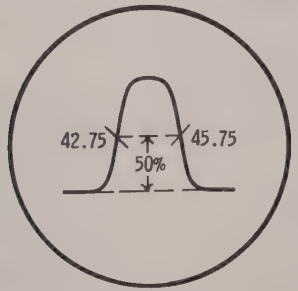


FIG. 3

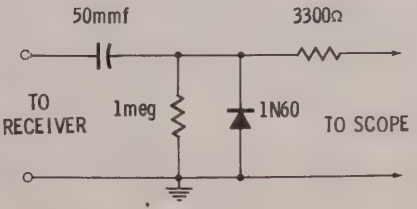


FIG. 4

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st. Video IF Amp. - Vert. Mult.	5B8	
V2	2nd. Video IF Amp. - Sync Sep	5B8	
V3	Video Output-Sound IF Amp.	6AW8A	
V4	Audio Det.	3DT6	
V5	Audio Output	12CA5	
V6	Vert. Mult. -Vert. Output	12W6GT	
V7	Horiz. Mult.	6SN7GTB	
V8	Horiz. Output	25DN6	
V9	Damper	1N34	
V10	HV Rectifier	1X2B	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	TransAmerican PART No	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V11	17CFP4		17CFP4 ①		① "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TransAmerican PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	≈200	300	245-300001	AFH83-13-90	XC0129			Q-008	*R2630
≈250	200							MT-2510	
C	≈10	200							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	TransAmerican PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.33	200	501-014334	P288N-33				GEM-2033		
C3	.33	300	501-014334	P288N-33		CUB2P23		GEM-2033	2TM-P23	
C4	1000		047-100230	BPD-001	DD-103	BYA5DI	ED-1000	DC521	5HK-DI	
C5	390		047-100659		MD-331	L10T39	ED-S30			10%
C6	510		047-100001			L10T51	ED-S10			10%
C7	1000		047-100230	BPD-001	DD-103	BYA5DI	ED-1000	DC521	5HK-DI	
C8	4.7		047-100403-06	NPO-S1 4.7	TCZK-4R7	CTA5V47C	TCO-4.7	ZT-5547	5TCCB-V47	10%
C9	10		047-100160-11	S1 10	D6-100	L7Q10	GP-10	UC-541	5TCC-Q1	
C10	1000		047-100230	BPD-001	DD-103	BYA5DI	ED-1000	DC521	5HK-DI	
C11	.047	200	501-014473	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C12	68		047-100635							NT5 10%
C13	10		047-100160-11	S1 10	D6-100	L7Q10	GP-10	UC-541	5TCC-Q10	
C14	82		047-100634							N80 10%
C15	10000		047-100234	BPD-01	DD-103	BYA10G1	ED-01	DC511	5HK-S1	
C16	.1	300	501-014104	P288N-1	DF-104	CUB2P1		GEM-3101	2TM-P1	
C17	.33	600	501-014234	P688N-33		CUB6S23		GEM-6023	6TM-P23	
C18	47		478-017470	S1 47	D6-470	L7Q47	GP-47	UC-5447	5GA-Q47	
C19	3		047-100607							5%
C20	10000		047-100234	BPD-01	DD-103	BYA10G1	ED-01	DC511	5HK-S1	
C21	1000		047-100230	BPD-001	DD-103	BYA5DI	ED-1000	DC521	5HK-DI	
C22	15		047-100480	NPO-S1 15	D6-150	CTA5Q15C	GP-15		5TCC-Q15	10%
C23	.047	200	501-014473	P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C24	10000		047-100234	BPD-01	DD-103	BYA10G1	ED-01	DC511	5HK-S1	
C25	1000		047-100230	BPD-001	DD-103	BYA5DI	ED-1000	DC521	5HK-DI	
C26	10000		047-100234	BPD-01	DD-103	BYA10G1	ED-01	DC511	5HK-S1	
C27	10000		047-100234	BPD-01	DD-103	BYA10G1	ED-01	DC511	5HK-S1	
C28	820		047-100606	BPD-0008	DD-821	BYA10T82	ED-S20		5GA-T82	
C29	3000		047-100396	BPD-002	DD-302	BYA10D2	ED-002	DC522	5HK-D2	
C30	.0033	400	348-300003							10%
C31	1000		047-100586				ED-1000			10%
C32	.047	200	501-014473							10%
C33	.047	200	501-014473							10%
C34	10000	2000	047-100708				ED-01	DC511	30HKB-S1	
C35	100		478-027101	NPO-S1 100	D6-101	CTA5T1C	GP-100	ZT-551	5TCC-T1	10%
C36	47		478-027470	NPO-S1 47	D6-470	CTA5Q47C	GP-47		5TCC-Q47	10%
C37	1000		047-100603	BPD-001	DD-103	BYA5DI	ED-1000	DC521	5HK-DI	
C38	1000		047-100230	BPD-001	DD-103	BYA5DI	ED-1000	DC521	5HK-DI	
C39	.1	200	501-014104	P288N-1	DF-104	CUB2P1		GEM-3101	2TM-P1	
C40	.0056	400	348-300004					GEM-16256		10%
C41	330		347-300010	1469-00033	MD-331	5R5T33	CY15C331K		MS-333	10%
C42	680		347-100024	1469-00068	MD-681	1R5T68	CY20C681K		MS-368	10%
C43	.0047	300	501-014473					GEM-16247		10%
C44	470		047-100636	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C45	.1	200	501-014104	P288N-1	DF-104	CUB2P1		GEM-3101	2TM-P1	
C46	.15	600	501-014154	P688N-15		CUB2P15		GEM-2015	2TM-P15	
C47	56	2000	047-100537			HVA20Q56			20GA-Q56	10%
C48	68	3000	047-100473						30GA-Q68	10%
C49	.22	300	501-014224	P288N-22		CUB2P22		GEM-3022	2TM-P22	
C50	.33	600	499-034224	P688N-22		CUB6P22		GEM-6022	6TM-P22	
C51	10000	1400	247-100008						20HKB-S8	
C52	1000		047-100230	BPD-001	DD-103	BYA5DI	ED-1000	DC521	5HK-DI	
C53	10000		047-100234	BPD-01	DD-103	BYA10G1	ED-01	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TransAmerican PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	470K	½	125-300017	B-80	A47-500K-Z	Q13-133	TA55A	Volume
B	Shaft			Not Req.	F8-3	Not Req.	Not Req.	
C	Switch			KB-1 or KB-1*	SWE-12	T6-1	U8-26	
R2	100Ω	½	125-300018	B-505		Q17-108	U3	Contrast
R3	5meg	½	125-300019			Q17-141	TA56R	Brightness
R4A	1meg	½	125-300020	B-49	A47-1meg-S	Q11-137	TA16L	Vert. Hold
B	Shaft			Not Req.	F8-3	Not Req.	Not Req.	
R5A	75K	½	025-301305	AB-35	A47-75K-S	Q11-125	PTA15L	Horiz. Hold
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R6A	5meg	½	025-301386					Height with 1meg stop
B	2meg	½						Vert. Lin.

* Use KR with CRL "red label" control and KB with "blue label" control.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		TransAmerican PART No.	NOTES
	OHMS	WATT		
R7	220Ω		451-252231	
R8	10K		451-252103	
R9	150Ω		451-252151	
R10	56Ω		451-253560	
R11	150Ω		451-252151	
R12	180Ω		451-252181	
R13	680Ω		451-253681	
R14	1meg		451-252105	
R15	3.3meg		451-253395	
R16	2.7meg		451-252275	
R17	3300Ω 5%	7	024-10123	
R18	120K		451-252124	
R19	100K		451-252104	
R20	33K		451-252333	
R21	680K		451-252684	
R22	270K		451-252278	
R23	680K		451-252684	
R24	2200Ω		451-252322	
R25	680Ω		451-252681	
R26	27K	2	451-852273	
R27	2200Ω		451-252222	
R28	120Ω		451-252121	
R29	15K		451-252153	
R30	12K	1	451-252123	
R31	68K		451-255683	
R32	6800Ω		451-252682	
R33	12K		451-252123	
R34	100K		451-252104	
R35	100K		451-252104	
R36	100K		451-252104	
R37	100K		451-252104	
R38	1.5meg		451-252155	
R39	470K		451-252474	
R40	180K		451-252184	
R41	680Ω		451-252681	
R43	680Ω		451-252681	
R43	1meg		451-252105	
R44	1meg		451-252105	
R45	4700Ω		451-252472	
R46	220K		451-252224	
R47	1meg		451-252105	
R48	82K		451-252283	
R49	12K		451-252123	
R50	12000Ω 5%		451-251123	
R51	56K		451-252563	
R52	47K		451-252473	
R53	390K		451-252394	
R54	3300Ω		451-253332	
R55	390K		451-252394	
R56	47K		451-252473	
R57	1200Ω	2	451-622122	
R58	27K		451-252273	
R59	6800Ω		451-252682	
R60	2.2Ω		451-252022	
R61	26Ω	15	224-200007	
R62	4.7Ω	3	024-20116	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		TransAmerican PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thorderson PART No.	Triad PART No.	
T1	Vert. Output	055-100303	Z1900 ①	A-3822 ②			26875 ①		
	Alt. Vert. Output	055-300303							
T2A	Yoke-Horiz. (24MH)	053-300396	DF-810	MDF-92	Y90F19/43			Y-45 &	
B	(90°)-Vert. (40MH)		⑤④	③④	③④			NW19 ④	
M5	Rear Cover & Centering Device	221-300003							
	Yoke Clamp	278-200024							
T3	Horiz. Output	055-300301		HVO-134	K154 *		HO-287 *	D-124	

① Use 8 to 1 turns ratio.
② Drill new mounting hole(s).
③ Use original yoke damping network, if necessary.
④ Connect same as original.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thorderson Replacement Connections	Triad Replacement Connections
2			2	2		
4			4	4		
3			3	3		
1			1	1		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TransAmerican PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thorderson PART No.	Triad PART No.	
T4	4000Ω	3-4Ω	255-100012	Z1107 ①	A-3026	AU-601 ①	A-3328	24848	S-6X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE				REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.		TransAmerican PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω		285-300010	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		TransAmerican PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	1st. Video IF	051-201167	17-4534	TV-131		VF-4	
L2	2nd. Video IF	[illegible]					7.5 Microhenries
L3	3rd. Video IF	050-200588					808 Microhenries
L4	RF Choke	053-100307					
L5	Shunt Peaking Coil	051-102103		TV-207	6156		
L6A	4.5MC Trap	051-201w6		TV-120			
B	1st. Sound IF						
L7	Shunt Peaking Coil	051-102101	19-4400*	TV-201 *	6134 *		383 Microhenries, wound on 3900Ω resistor
L8	Series Peaking Coil	051-102184	19-3180 ▲	TV-196 ▲	6130 ▲	VP-5 ▲	163 Microhenries, wound on 27K resistor
L9	2nd. Sound IF	051-201166					
L10	Quadrature Coil	051-201857	20-1005 ♦	TV-121 ♦	1490 ♦		
L11	RF Choke	053-100342					7.5 Microhenries, IRC Part #CLA

* Parallel with 3900Ω resistor.
▲ Parallel with 27K resistor.
♦ Drill new mounting hole.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	TransAmerican PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.		
L12	23Ω		051-202169	19-1575	TV-163 *	6310 *	H-103 *	HH-4		* Enlarge mtg. hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 (%)	TransAmerican PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L13	.250A	16Ω	46 Hy.	256-200002	C5037 ①			C-2326①	26C23 ①	C-27X

① Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TransAmerican PART No	REPLACEMENT DATA	
K1	Sync Coupling	270mmf, 10000mmf, 150mmf, 25mmf, 220K, 220K, 2.2meg	249-300001		
K2	Cabinet Isolation	470mmf, .3-1meg	049-100072	Centralab Sprague	RC-471 R-9177
K3	Control Bracket Isolation	470mmf, .3-1meg	049-100072	Centralab Sprague	RC-471 R-9177

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	Trans American PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.335A	227-200001 ①	1N1008 ②	SD94A	M500 ①		① Silicon type.
M2		027-300226 ③	K1615 ③	1T1 ③④			② Germanium type.
							③ Selenium type.
							④ 2 Required.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Trans American PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N295	019-301980	1N80	1N80	Video Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	Trans American PART No.	NOTES
M4	Tuner	201-100148	VHF
M5	Centering Device	221-300003	Includes yoke rear cover

CABINETS & CABINET PARTS

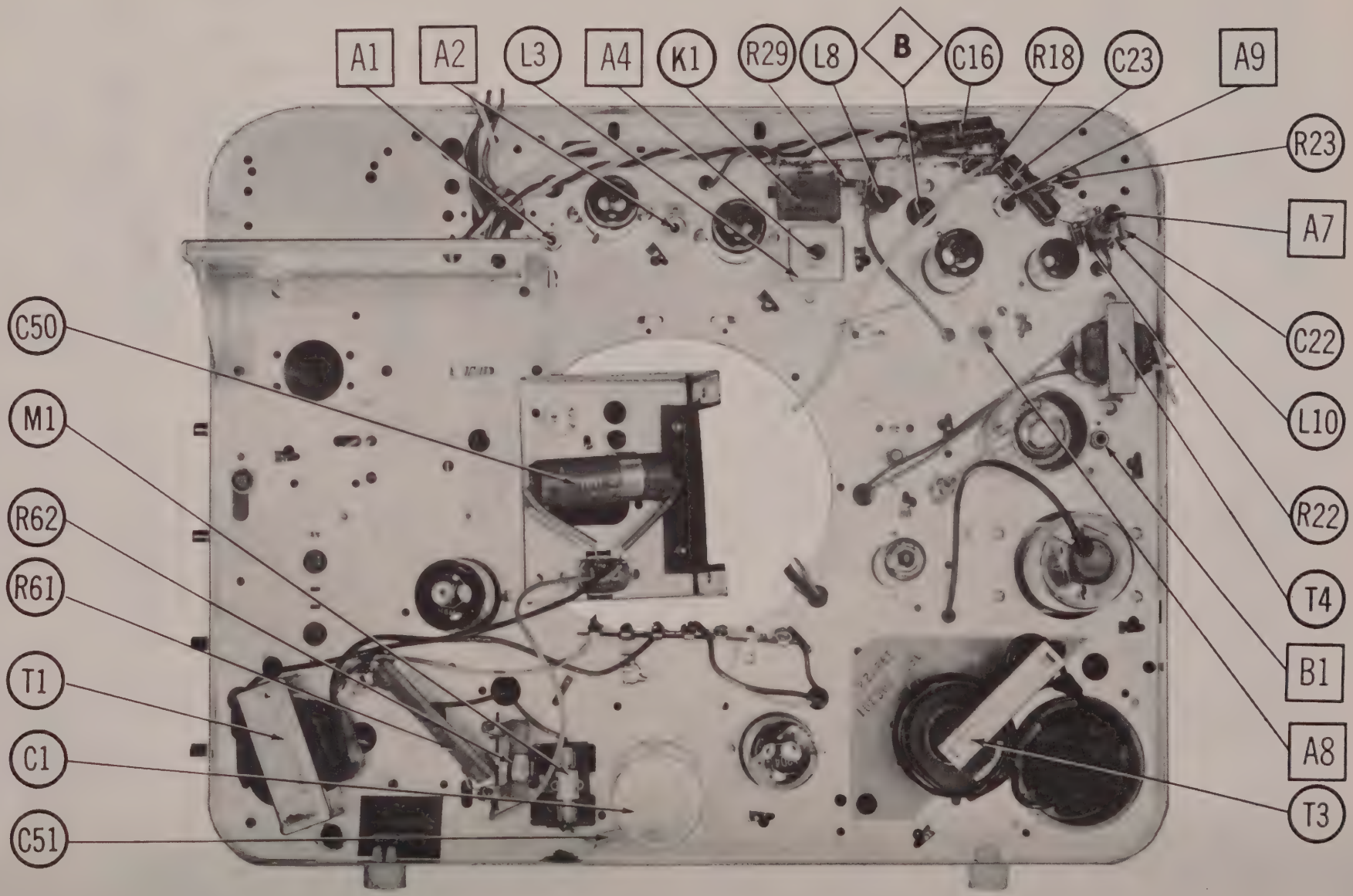
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8465 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

TRANS AMERICAN MODEL MJ178PV

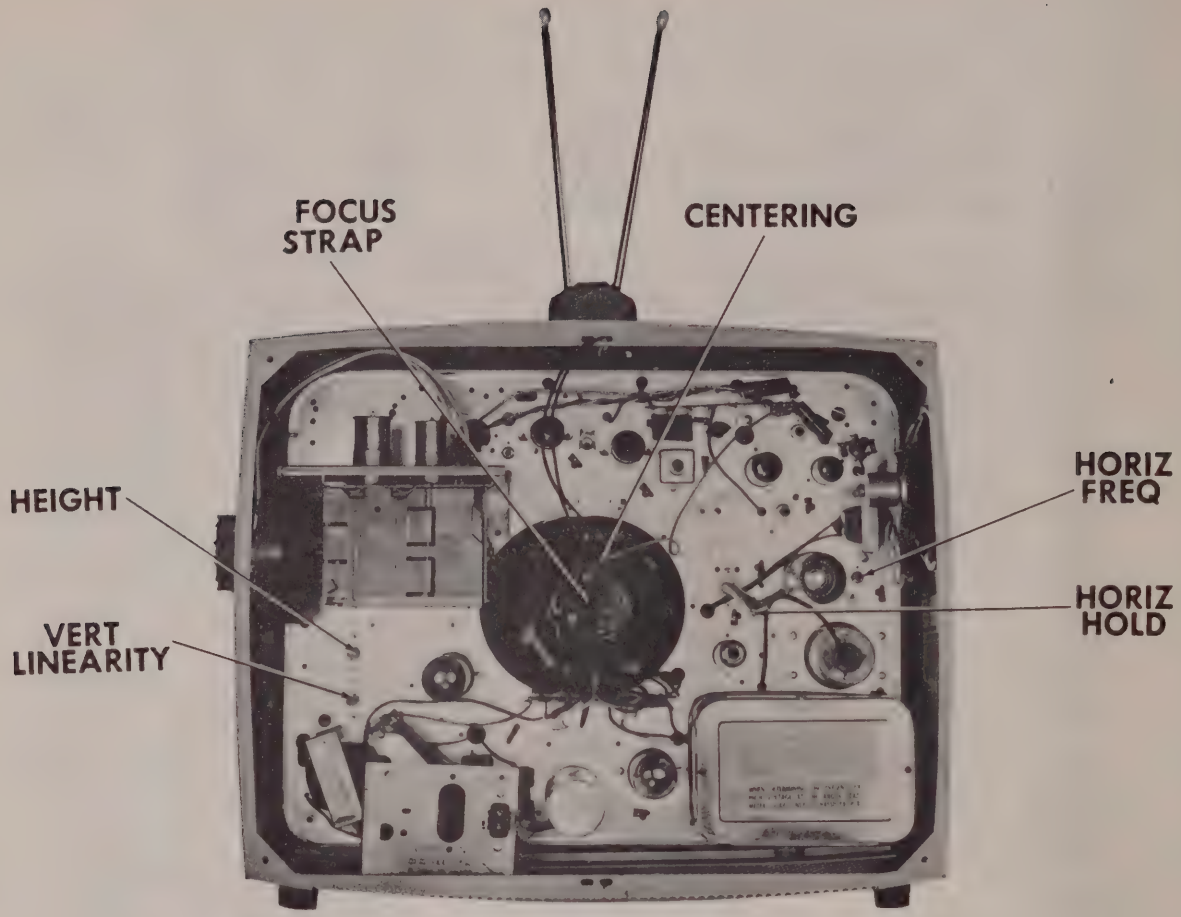
FOLDER 2



CHASSIS TOP VIEW

RF TUNER

TRANS AMERICAN
MODEL MJ178PV



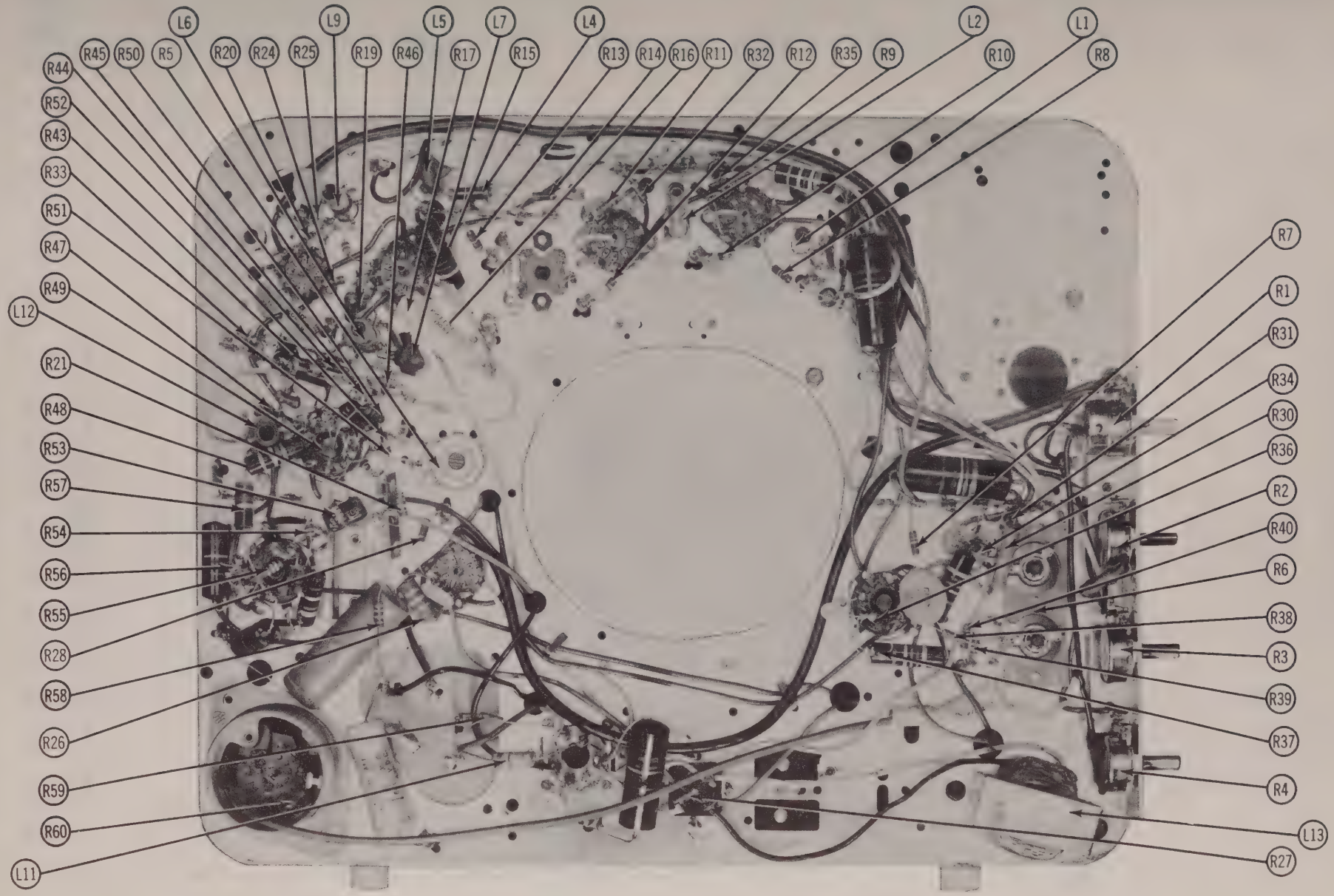
CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a station, preferably with a test pattern.

2. Set the Horizontal Hold (R5) at the center of its range and adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally.

3. Check horizontal sync on other channels and if necessary, retouch B1 for best sync on all channels.

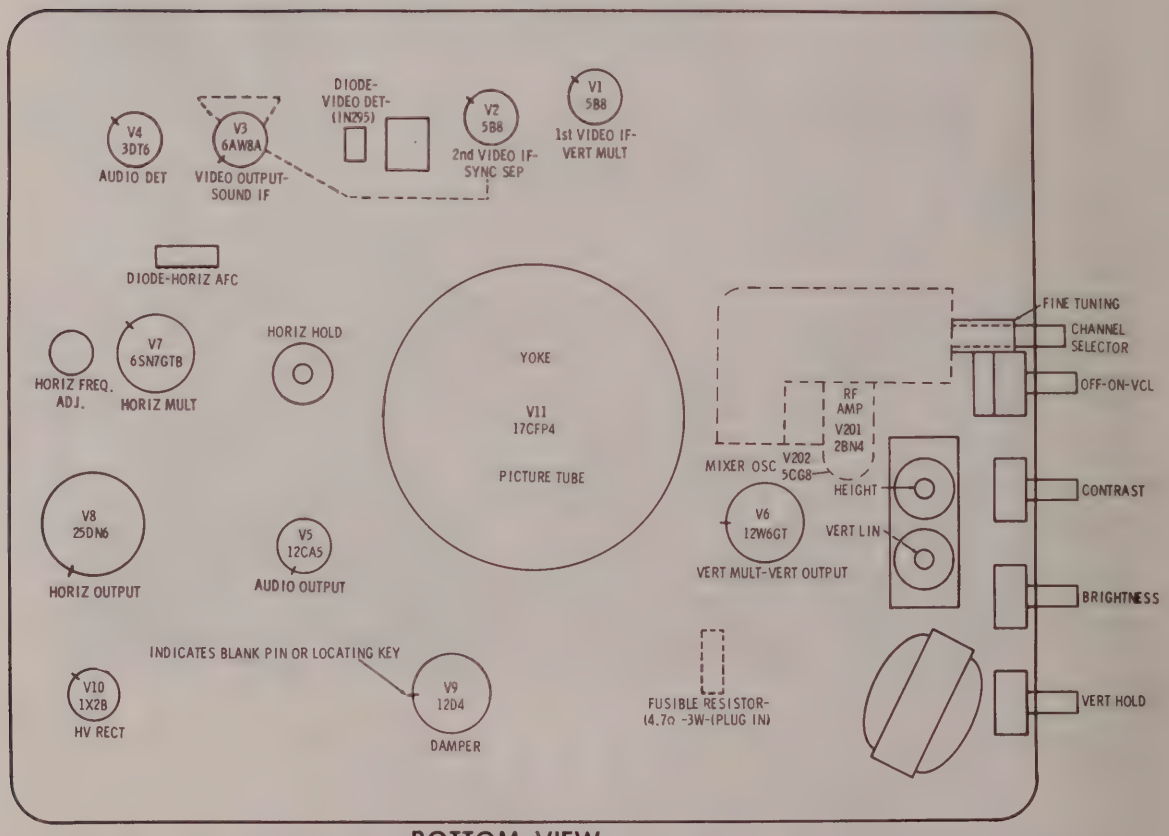


CHASSIS-RESISTOR AND INDUCTOR IDENTIFICATION

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	5B8	0Ω	•900K	•†2meg	8Ω	9Ω	1meg	56Ω	†150Ω	†150Ω
V2	5B8	0Ω	2.4meg	†8000Ω	7Ω	8Ω	.1Ω	180Ω	†150Ω	†150Ω
V3	6AW8A	0Ω	100K	†35K	6Ω	7Ω	•120Ω	1.3meg	†16Ω	†3300Ω
V4	3DT6	4.3Ω	680Ω	6Ω	5Ω	‡700K	†2200Ω	680K		
V5	12CA5	115Ω	0Ω	15Ω	13Ω	0Ω	†2200Ω	†225Ω		
V6	12W6GT	TP	10.5Ω	†286Ω	†16Ω	•2.1meg	TP	13Ω	0Ω	
V7	6SN7GTB	2.3meg	†12K	1200Ω	• 80K	†47K	1200Ω	3.5Ω	5Ω	
V8	25DN6	TP	15Ω	0Ω	TP	440K	TP	20Ω	†1200Ω	TOP CAP ‡13.7Ω
V9	12D4	NC	TP	¶	NC	†16Ω	NC	0Ω	2.5Ω	
V10	1X2B	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡450Ω
V11	17CFP4A	2.5Ω	9.5Ω	PIN 6 ‡27K	PIN 10 †27K	PIN 11 • 240K	PIN 12 3.5Ω			
V201	2CY5	1meg	0Ω	10Ω	10.5Ω	†220Ω	†7500Ω	0Ω		
V202	5CL8	15K	†4900Ω	0Ω	9Ω	10Ω	†2400Ω	†220Ω	0Ω	220K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 140V SOURCE.
‡ MEASURED FROM PIN 3 OF V9.
NC NO CONNECTION
TP TIE POINT



BOTTOM VIEW

TUBE PLACEMENT CHART

PHOTOFACT* Folder
*TRADE MARK
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

WELLS-GARDNER MODELS
321N74-A-3768, 2321N74-A-3770

WELLS-GARDNER MODELS
321N74-A-3768, 2321N74-A-3770

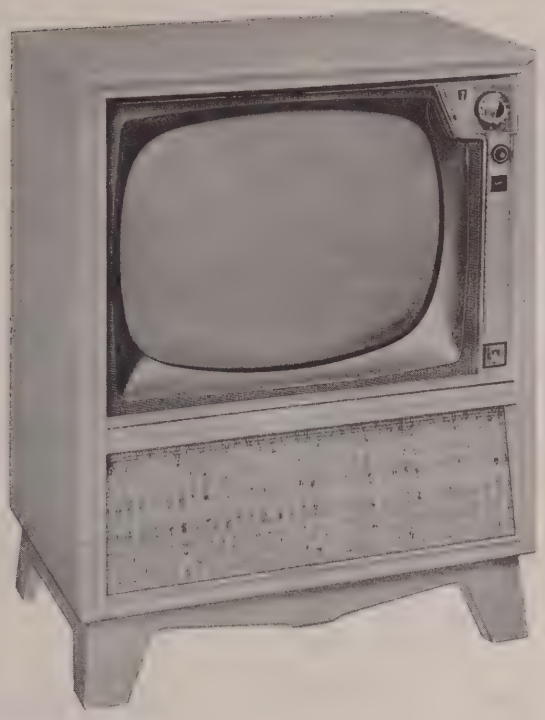
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs from the front. Remove 2 wood screws holding the knob escutcheon and remove remaining 4 knobs.
2. Remove 5 wood screws holding the rear cover. Remove the rear cover.
3. Loosen 2 wood screws holding the antenna terminal board.
4. Remove speaker leads.
5. Remove 2 wood screws holding the top chassis braces.
6. Remove 4 chassis bolts from the bottom.
7. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.



TRADE NAME	Wells-Gardner MODELS 312N74-A-3768, 2321N74-A-3770
MANUFACTURER	Wells-Gardner Co., 2107 N. Kildare Avenue, Chicago 39, Illinois
TYPE SET	Television Receiver
TUBES	Eighteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 155 Watts, 1.4 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 wood screws from the trim strip at the top of the safety glass. Tilt the glass out at the top and lift up to remove.

SPECIAL ADJUSTMENTS

A. Focus
Adjust the beam alignment magnet on the neck of the picture tube for best focus.

B. Range
Observe the picture and advance the range control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

C. Sync Stab Adjustment
Tune in the strongest TV station operating in the area. Adjust controls for a normal picture. Adjust the sync stab control clockwise until bending or jitter occurs. Back off from this setting until the picture is stable. Check operation on all channels operating in the area and readjust if necessary.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate audio detector buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart).

FUSE DEVICE

A circuit breaker is used for LV power supply protection and may be reset by depressing the reset button. (For location, see tube placement chart).

CENTERING

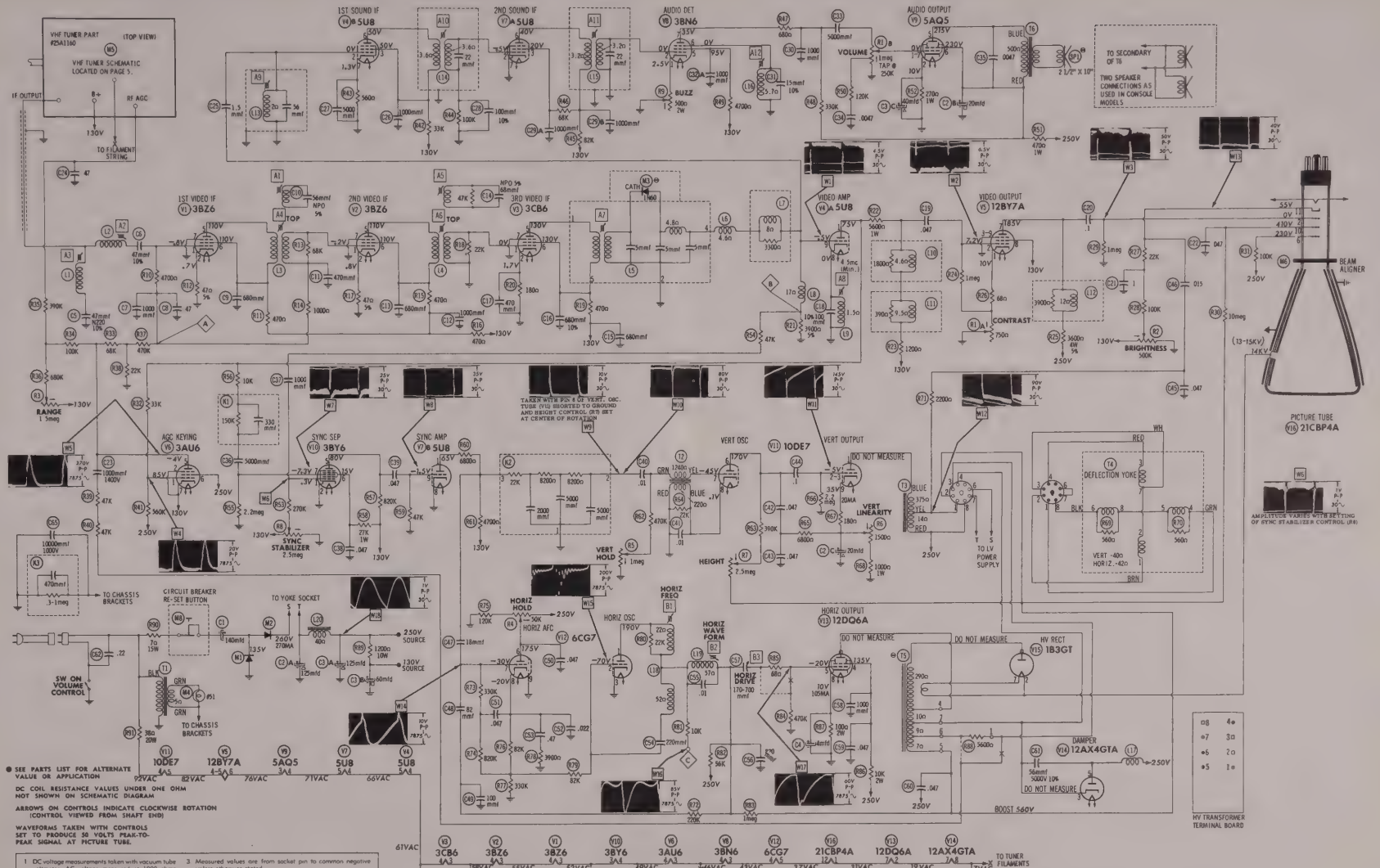
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H427R

SET 410 FOLDER 3



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2. Pin numbers are counted in clockwise direction on bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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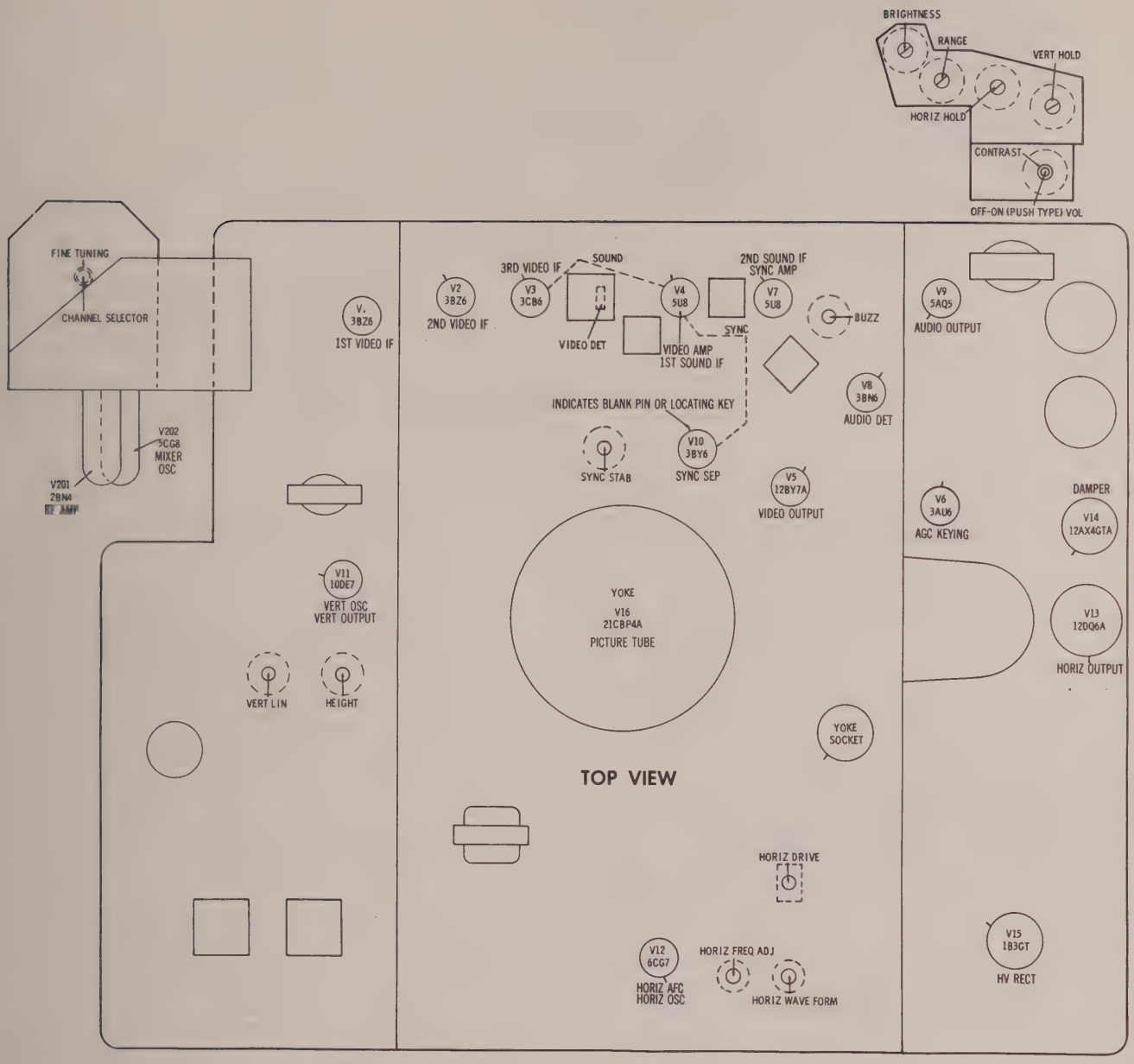
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

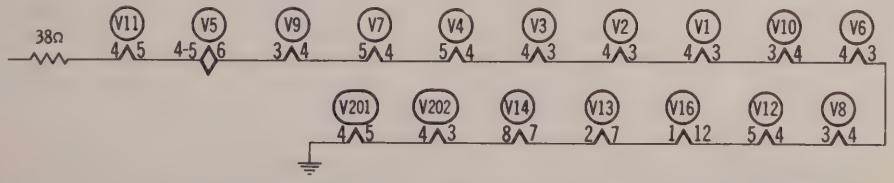
POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker (M8), Rectifier (M1, M2)

SWEEP FAILURE
No raster, has sound V12, V13, V14, V15, V16
No vertical deflection V11
Poor vert. linearity or foldover V11
Poor horiz. linearity or foldover V12, V13, V14
Narrow picture V12, V13, V14, M1, M2
Vert. off freq. V11
Horiz. off freq. V12

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M3)
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V5, V16
Has pic, no sound V4, V7, V8, V9
Overloaded picture V6

SYNC FAILURE
No vert. sync V10, V7
No horiz. sync V10, V7, V12
No vert. or horiz. sync V10, V7

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



WELLS-GARDNER MODELS
321N74-A-3768, 2321N74-A-3770

FOLDER 3

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	47.25MC	Any non-interfering channel	Vert. Amp. thru det. probe (Fig. 1) to pin 5 (plate) of 3BZ6 (V1). Low side to chassis.	A1	Adjust to place marker in trap notch as in Fig. 2.
2.	"	"	"	41.25MC 45.75MC 47.25MC	"	"	A2, A3, & Mixer Plate Coil	Adjust for response similar to Fig. 2. Mixer plate coil and A2 affects the shape of the top. A3 is adjusted to position the 41.25MC marker. This adjustment must be made correctly or the sound rejection will not be correct. The 45.75MC marker must be exactly on peak.
3.	"	"	"	42.8MC	"	Vert. Amp. thru 10K to point (B). Low side to chassis. DC probe of VTVM thru 10K to same point. Common to chassis. (Across video det. load).	A4	Increase bias at point A to 4.5 volts. Adjust sweep output for -2 volts DC at point (B). Adjust A4 for maximum amplitude at marker.
4.	"	"	"	41.25MC	"	"	A5	Adjust for MINIMUM amplitude at marker.
5.	"	"	"	45.3MC	"	"	A6	Adjust for maximum gain at marker.
6.	"	"	"	44.0MC	"	"	A7	"
7.	"	"	"	41.25MC 42.4MC 42.8MC 44.0MC 44.5MC 45.3MC 45.75MC 47.25MC	"	"		Check for response similar to Fig. 3 with markers as shown. If necessary, retouch A2 thru A7 for desired response. A7 controls the symmetry of the top, A6 controls position of the 45.75MC marker. A4 controls position of the 42.4MC marker (this slug will seldom need retouching. CAUTION: The position of 44.5MC marker is very critical (98%).

4.5MC TRAP ALIGNMENT

Use 0-10 volts AC scale on VTVM.
Set contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.005mfd	High side to pin 9 (grid) of 5U8 (V4). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to pin 11 (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV signal and reduce signal level at the antenna terminals by use of an attenuator or similar device until a hiss similar to super regeneration is heard in the sound.
Adjust A9, A10, A11 and A12 for maximum undistorted sound.
Adjust the buzz control (R9) for MINIMUM buzz.

TUNER ALINGMENT INSTRUCTIONS LOCATED ON PAGE 6.

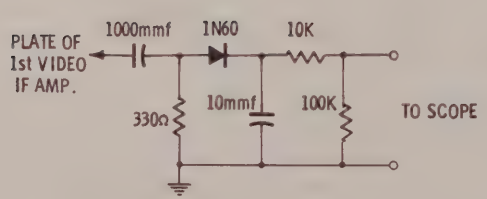


FIG. 1

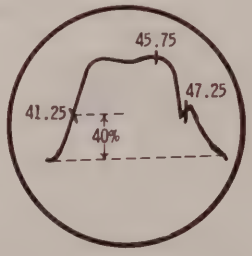


FIG. 2

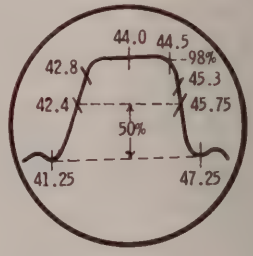
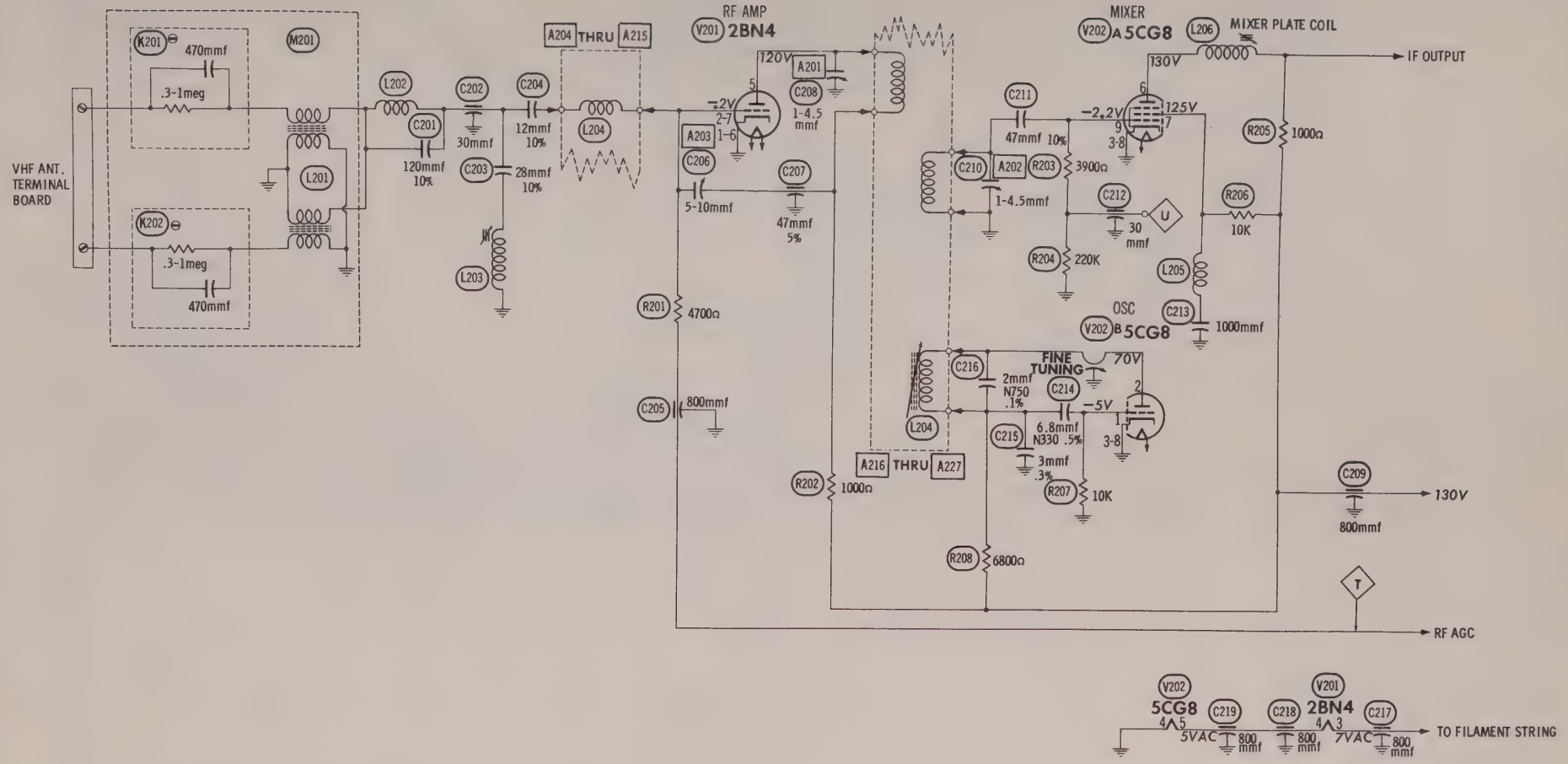


FIG. 3



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER #25A1160

321N74-A-3768, 321N74-A-3770

WELLS-GARDNER MODELS

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Allow a 20 minute warm-up period for the receiver and test equipment.

RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓣ. Positive to chassis.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading. (Approximately 1.5 volts).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A201, A202	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201.
2.	"	"	"	"	"	Vert. Amp. thru detector (Fig. 202) to plate of 1st. IF tube. Low side to chassis.	A203	Adjust A203 to obtain MINIMUM response on the scope.
3.	"	"	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading. (Approximately 4.5 volts).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video detector load.	A216	Adjust to place sound marker in trap notch as in Fig. 203. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

FIG.201

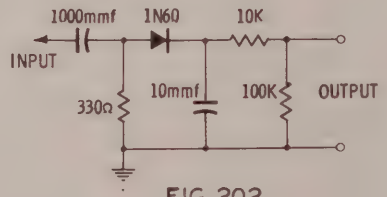


FIG.202

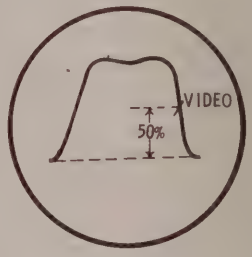
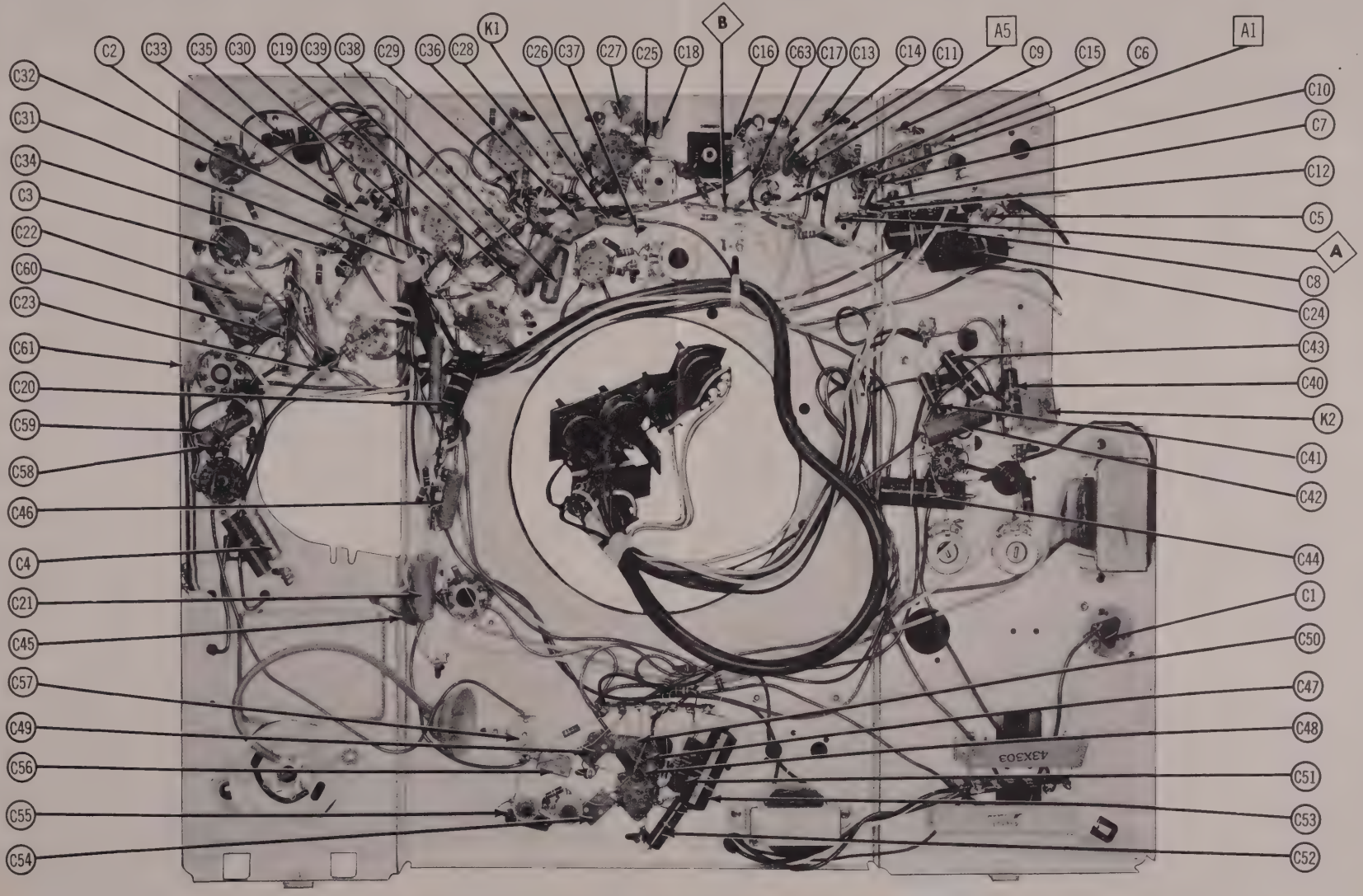
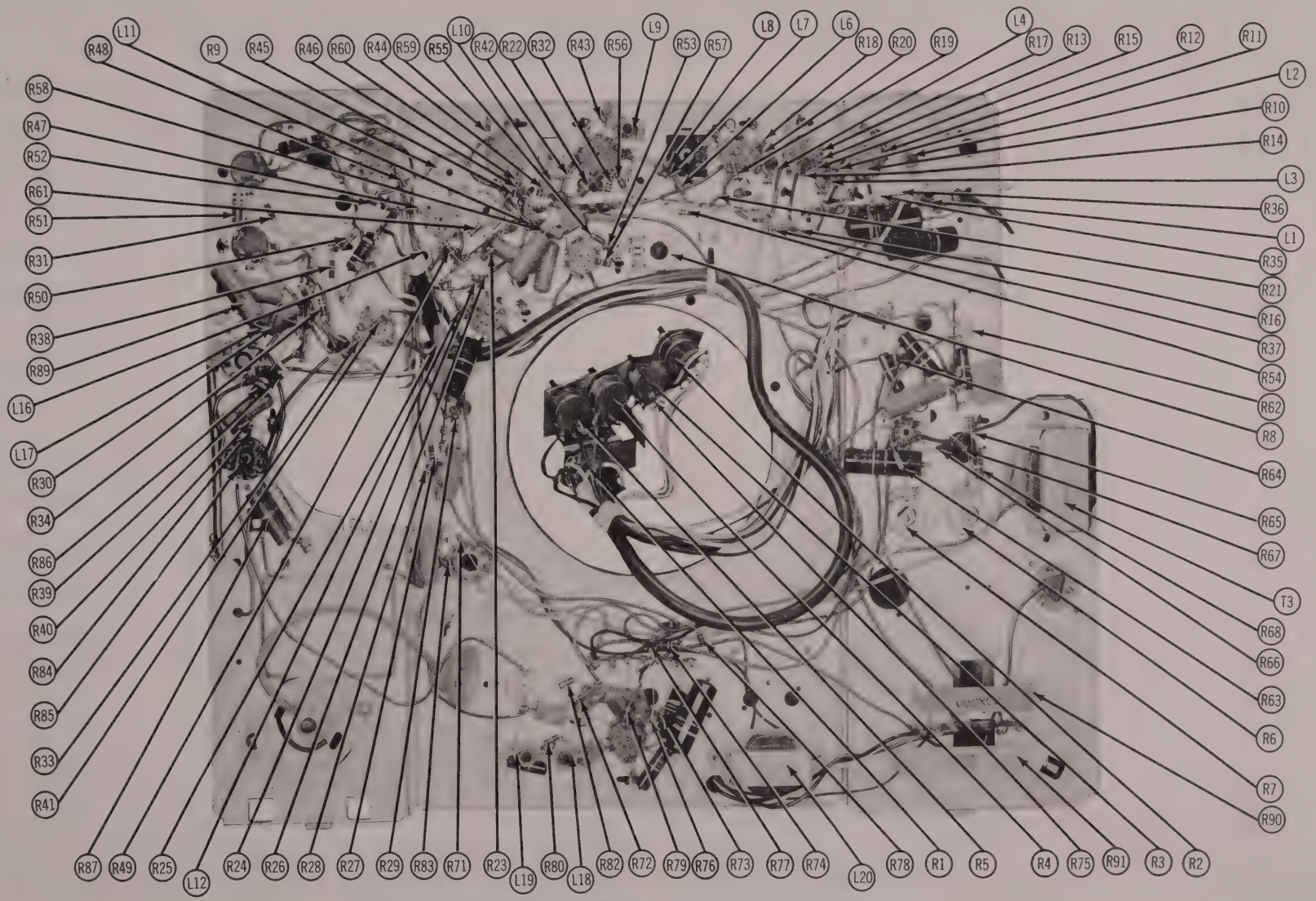


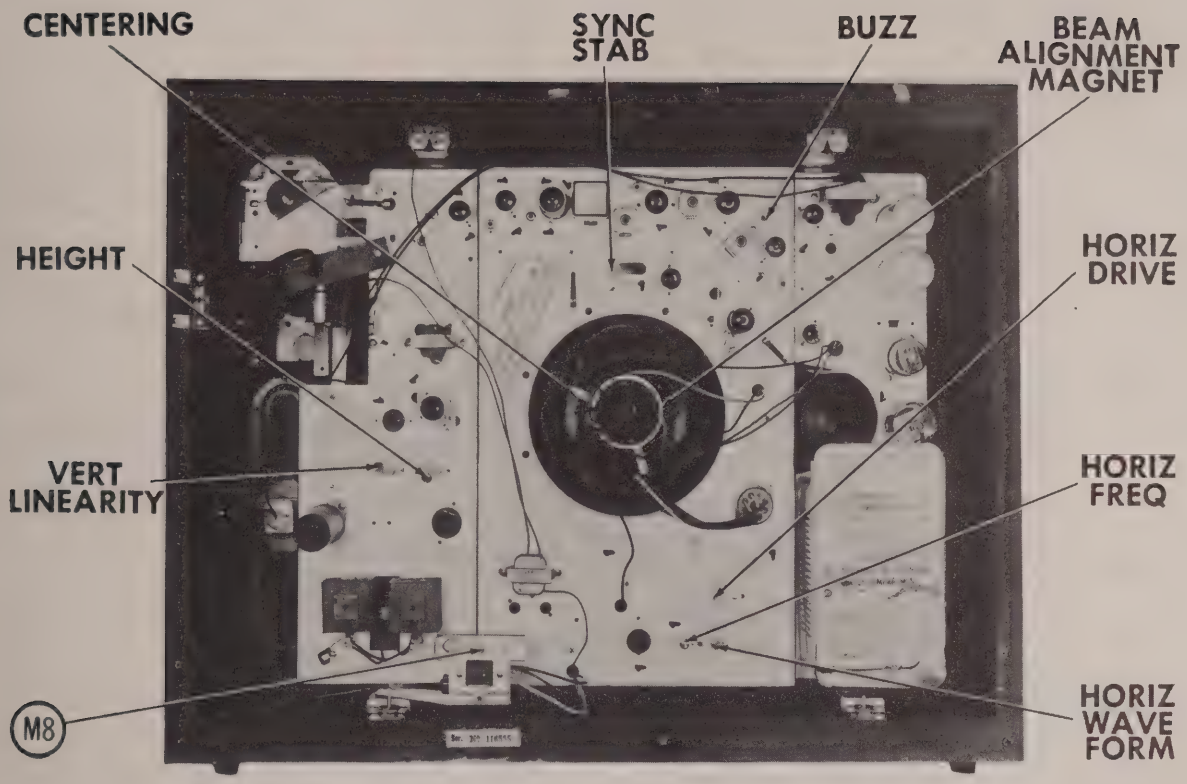
FIG.203



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Turn the horizontal hold control to the center of its range.

Connect a clip lead across the horizontal waveform coil (L19). Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Remove the clip lead from L19. Connect the vertical amplifier of the scope thru a low capacity probe to point ⓒ. Low side to chassis.

Adjust the horizontal waveform slug (B2) for equal amplitudes of the round and sharp peaks of the waveform as shown in Fig. 4. While making this adjustment, keep the picture in sync with the horizontal hold control and B1.

Turn the horizontal drive trimmer (B3) clockwise as far as possible without the presence of vertical white lines or compression near the center of the raster.

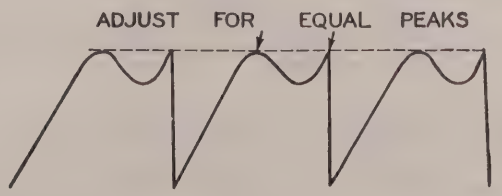


FIG. 4

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st. Video IF Amp.	3DZ6	
V2	2nd. Video IF Amp.	3DZ6	
V3	3rd. Video IF Amp.	3CB6	
V4	Video Amp - 1st. Sound IF Amp.	6U8	
V5	Video Output	12BYTA	
V6	AGC Keying	3AU6	
V7	2nd. Sound IF Amp. - Sync Amp.	6U8	
V8	Audio Det.	3BN6	
V9	Audio Output	5AQ5	
V10	Sync Sep.	3BY6	
V11	Vert Osc. -Vert.Output	10DE7	
V12	Horiz. AFC-Horiz. Osc.	6CG7	
V13	Horiz. Output	12DQ6A	
V14	Damper	12AX4GTA	
V15	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: Wells-Gardner PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	NOTES
V16	21CBP4A		21CBP4-A ①	21CBP4A ②	① "Silverama" ③ ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	Wells-Gardner PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	140	150	45X421	AFHR-23	XA028I	FPU7	TMS-34	T-055	TVL-1428
C2A	235	300	45X431	AFH4-02-60	XC0733.2	FP218 TC36		Q-232.2 MT-0520	*H2376
B	80	300							
C	30	50							
C3A	235	300	45X430	AFB3-99-82	XC0733.4	FP420.76 TC85	TMT-26	T-115 MT-0550	TVL-3574.6
B	80	300							
C	40	50							
C4	4	50	45X418	PR8150V4	BBR4-50	TC30	TD-4-50	MT-0504	TE-1302.1

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	Wells-Gardner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
	47									N330 10%
C6	47			NPO-SI 47	DTZ-47	CTA6Q47C	TCO-47		5GA-Q47	10%
C7	1000			BPD-001	DD-102	BYA101KM	ED-1000	DC521	5HK-DI	
C8	.47	200		P388N-47		CUB2P47		GEM-2047	2TM-P47	
C9	680			BPD-00068	DD-681	BYA10T68	ED-680 TCO-56	UC-5368	5GA-T68	NPO 5%
C11	470			BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C12	1000			BPD-001	DD-102	BYA10DM	ED-1000	DC521	5HK-DI	
C13	680			BPD-00068	DD-681	BYA10T68	ED-680 TC-56	UC-5368	5GA-T68	
C14	68				DTZ-68		TCO-56			NPO 5%
C15	680			BPD-00068	DD-681	BYA10T68	ED-680 ED-680	UC-5368	5GA-T68	10%
C16	680									
C17	470			BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C18	100			NPO-SI 100	D6-101	CTA5T1C	GP-100	ET-531	5TCC-T1	10%
C19	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C20	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C21	.1	200		P288N-1	DF-104	CUB2P1		GEM-401	2TM-P1	
C22	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C23	1000	1400		HVD-15-100	DD30-102	HVH61S1	HD15-1000	DC3021	30GA-D1	
C24	.47	200		P288N-47		CUB2P47		GEM-2047	2TM-P47	
C25	1.5			NPO-SI 1.5	TCZ-1R5	CTA5Y1SC	TCO-15	ZT-5515	5TCCB-V15	
C26	1000			BPD-001	DD-102	BYA101DM	ED-1000	DC521	5HK-DI	
C27	5000			BPD-005	DD-502	BYA10D5	GP-5000	DC525	5HK-D5	
C28	100			NPO-SI 100	D6-101	CTA5T1C	GP-100	ET-531	5TCC-T1	10%
C28A	1000		80X3	BPD-X2001	DD3-102	BYD1DDI	ED2-001	DCD-521	5HK-2DI	
B	1000									
C30	1000			BPD-001	DD-102	BYA10DM	ED-1000	DC521	5HK-DI	
C31	10			NPO-DI 15	DD-150	C10Q15C	ED-15		5TCC-Q15	10%
C32A	1000		80X3	BPD-X2001	DD3-102	BYC5DDI	ED2-001	DCD-521	5HK-2DI	
B	1000									
C33	5000			BPD-005	DD-502	BYA10D5	GP-5000	DC525	5HK-D5	
C34	.0047	600		P488N-0047	D6-472	CUB4D47	GP-4700	GEM-6247	6TM-D47	
C35	.0047	800		P868N-0047	D8-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C36	5000			BPD-005	DD-502	BYA10D5	GP-5000	DC525	5HK-D5	
C37	1000			BPD-001	DD-102	BYA10DM	ED-1000	DC521	5HK-DI	
C38	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C39	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C40	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C41	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C42	.047	800		P868N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C43	.047	300		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C44	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C45	.047	600		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C46	.015	600	RCP10M6153M	P688N-015		CUB10S15		GEM-6115	6TM-S15	
C47	18		RCM20B180K	1466-00018	D8-180	5WGQ18	CY10C180K		MS-418	
C48	82			1466-00082	D8-820	5WGQ82	CY10C820J		MS-482	
C49	100			1466-0001	DD-101	5WST1	CY10C10J	MC325	MS-S1	
C50	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C51	.047	300		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C52	.033	300		P288N-033		CUB2S33		GEM-4123	2TM-S33	
C53	.47	300		P288N-47		CUB2S47		GEM-2047	2TM-P47	
C54	330			1466-00022	DD-221	5WST22	CY10C221K		MS-322	
C55	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C56	820			1466-00082	DD-821	1WST82	CY15C821K		MS-382	
C57	170-700		17A37I							
C58	1000			BPD-001	DD-102	BYA10DM	ED-1000	DC521	5HK-DI	
C59	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C60	.047	600		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C61	56	5000	47X755							10%
C62	.22	400		P488N-33		CUB4P22		GEM-4022	4TM-P22	
C62A	1000		80X3	BPD-X2001	DD3-102	BYC5DDI	ED2-001	DCD521	5HK-2DI	
B	1000									
C64	1000			BPD-001	DD-102	BYA10DM	ED-1000	DC521	5HK-DI	
C65	10000	1000			DD-103	BYA10S1M			10KGK-S1	

PARTS LIST AND DESCRIPTIONS

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Wells-Gardner PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A		½	78X32		RTV-549		UE1178	Contrast Volume-tap ⑤ 250K
B	1meg	½			Not Req.			
C	Switch				Not Req.			
R2A	500K	½	40X428	AB-59	A47-500K-S	QI-133	U50	Brightness
B	Shaft			AK-8 *	RS-3/16 *	NQ *	DS-37	
R3A	1.5meg	½	40X430	AB-742	A47-1.5meg-S	QI-136	U155	Range
B	Shaft			AK-8 *	RS-3/16 *	NQ *	DS-37	
R4A	50K	½	40X427	AB-31	A47-50K-S	QI-128	U35	Horiz. Hold
B	Shaft			AK-8 *	RS-3/16	NQ *	DS-37	
R5A	1meg	½	40X428	AB-59	A47-1meg-S	QI-137	U54	Vert. Hold
B	Shaft			AK-8 *	RS-3/16 *	NQ *	DS-37	
R6A	1500Ω	½	40X399	AB-6	A47-1500S	QI-109	PTA152L	Vert. Lin.
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R7A	2.5meg	½	40X396	AB-53	A47-2.5meg-S	QI-239	PTA26L	Height
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R8A	2.5meg	½	40X398	AB-53	A47-2.5meg-S	QI-239	PTA26L	Sync Stabilizer
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R9	500Ω	4(WW)	40X397		39-500		FL-500	Buzz

* File shaft flat as required.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	RATING: WATT	Wells-Gardner PART No.	NOTES
R10	4700Ω			
R11	470Ω			
R12	47Ω 5%			
R13	68K			
R14	1000Ω			
R15	470Ω			
R16	470Ω			
R17	47Ω 5%			
R18	22K			
R19	470Ω			
R20	180Ω			
R21	3900Ω 5%			
R22	5600Ω	1		
R23	12000Ω			
R24	1meg			
R25	3800Ω 5%	4	43X331	
R26	68Ω			
R27	22K			
R28	100K			
R29	1meg			
R30	10meg			
R31	100K			
R32	33K			
R33	68K			
R34	100K			
R35	390K			
R36	680K			
R37	470K			
R38	22K			
R39	47K			
R40	47K			
R41	560K			
R42	33K			
R43	560Ω			
R44	100K			
R45	82K			
R46	68K			
R47	680Ω			
R48	330K			
R49	4700Ω			
R50	120K			

ITEM No.	RATING: OHMS	RATING: WATT	Wells-Gardner PART No.	NOTES
R51	470Ω	1		
R52	270Ω			
R53	270K			
R54	47K			
R55	2.2meg.			
R56	10K			
R57	820K			
R58	27K	1		
R59	47K			
R60	6800Ω			
R61	4700Ω			
R62	470K			
R63	390K			
R64	22K			
R65	6800Ω			
R66	2.2meg			
R67	180Ω			
R68	1000Ω	1		
R69	560Ω			
R70	560Ω			
R71	2200Ω			
R72	220K			
R73	68K			
R74	820K			
R75	120K			
R76	68K			
R77	330K			
R78	3900Ω			
R79	68K			
R80	22K			
R81	10K			
R82	56K			
R83	1meg			
R84	470K			
R85	68Ω			
R86	10K	2		
R87	100Ω	2		
R88	8000Ω			
R89	1200Ω	10		
R90	7Ω	15	43X303	
R91	38Ω	20	43X304	

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	Wells-Gardner PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
T1	117V	4.2V ⑤ 15A		54X20		P-2964 ①		P-8467 ①	21F21 ①	F-13X ①

① Drill new mounting hole.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	Wells-Gardner PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T2	Vert. Osc.	54X19	B6702	A-3003	V405	A-6125	26A03	A-97X	
T3	Vert. Output	51X186A	Z1900 ① ②	A-3038 ① ③	V307 ① ③	VO-100 ③	26S73 ③	A-116X ③	
T4A	Yoke-Horiz.(24.5MH)	9A-2403	DF607	MDF-92	Y90F19/43	DY-16A	Y-16	Y-41 &	
B	(90°)-Vert.(39MH)	④	③ ⑤	③ ⑤	③ ⑤	③ ⑤	③ ⑤	NW2 ⑤	
M7	Rear Cover & Centering Device	2A435						YC-1	
	Yoke Clamp	30X6U						CL-1	
	Rubber Strip	8X247							
T5	Horiz. Output	53X562B		HVO-162		HO-483 *		D-95 *‡	
	Alt. Horiz. Output	53X563		HVO-152		HO-385 *		D-95 *‡	

① Connect as autoformer.
② Use 9 to 1 turns ratio.
③ Drill new mounting hole(s).
④ Includes resistors (R68, R70).
⑤ Use original rear cover, centering device and horizontal damping network.
⑥ Connect same as original.
‡ This part may be superceded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordorson Replacement Connections	Triad Replacement Connections
4				8		5
7				3		4
6				2		YCT
5				1		1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	Wells-Gardner PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T6	4700Ω	3-4Ω	51X176	ZJ107	A-2930	AU-601	A-3877	24S51	S-3X	

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	Wells-Gardner PART No.	QUAM PART No.	NOTES
SP1	2½"x 10"	PM	3-4Ω	12A549 ①		① Used in table models
	4"	PM		12A547 ②		② Used in console models
	8"	PM		12A548 ②		

COILS (RF-IF)

ITEM No.	USE	Wells-Gardner PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	39MC Trap Coil	9A2369			4303		
L2	1st. Video IF	9A2385	17-4534	TV-131	4302	VF-4	
L3	2nd. Video IF	9A2363	17-4536		6223		Includes 47.25MC Trap
L4	3rd. Video IF	9A2414	17-4535		6421		Includes 41.25MC Trap
L5	4th. Video IF	9A2370	17-4514				Includes M3
L6	Resonant Choke	9A2378					30 Microhenries
L7	Series Peaking Coil	36A40	19-4073 *	TV-186 *	6173 *	VP-2 *	75 Microhenries, wound on 3300Ω resistor
L8	Shunt Peaking Coil	36A39	19-3250	TV-196	6130	VP-6	270 Microhenries
L9	4.5MC Trap	9A2413					
L10	Shunt Peaking Coil	36A42					80 Microhenries, wound on 1800Ω resistor
L11	Shunt Peaking Coil	36A41	19-3100 ▲	TV-194 ▲	6113 ▲	VP-3 ▲	100 Microhenries, wound on 390Ω resistor
L12	Shunt Peaking Coil	36A43	19-3150 ♦	TV-196 ♦	6130 ♦		150 Microhenries, wound on 3900Ω resistor
L13	1st. Sound IF	9A2383	17-1026	TV-154	1470-A		
L14	2nd. Sound IF	9A2368	17-3496	TV-113	6203	SF-3	
L15	3rd. Sound IF	9A2388	17-3495	TV-113	6203	SF-3	
L16	Quadrature Coil	9A2367	20-1005	TV-121	1440		
L17	RF Choke	9A2380	19-1001	BC-562	4604		1.5 Microhenries

* Parallel with 3300Ω resistor.
▲ Parallel with 390Ω resistor.
♦ Parallel with 3900Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI	DC RES.: SEC.	Wells-Gardner PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordorson PART No.	NOTES
L18	740*		9A2371		TV-165	6311 ▲		HB-7	Horiz. Freq.
L19	57Ω		9A2372			6315		HB-5 ▲	Horiz Waveform

* Tapped ⑤ 53Ω. ▲ Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE (@ CURRENT 1000 °C)	Wells-Gardner PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
L20	.270A	40Ω	1 Hy.	53X95-5	C5037 ①	C-2995 ①		C-2336 ①	26C44 ①	C-24X

① Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Wells-Gardner PART No.	REPLACEMENT DATA	
K1	Sync Sep. Coupling	330mmf, 150K	78X13	Sprague	PRC-5
K2	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 8200Ω, 8200Ω	78X7	Aerovox Centralab Erie Cornell-Dubilier Sprague	PA-110 PC-104 1405-01 115TM1 V-1
K3	Bracket Isolation	470mmf, .3-1meg	78X11	Centralab Sprague	RC-471 R-2177

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	Wells-Gardner PART No.	REPLACEMENT DATA: FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.270A	66X17 ①	1N23A ①	1N1007 ②	RS350BL ①	350A ① M500 ②	① Selenium type. ② Germanium type.
M2	.270A	66X17 ①	1N23A ①	1N1007 ②	RS350BL ①	350A ① M500 ②	③ Silicon type.

WELLS-GARDNER MODELS 321IN74-A-3768, 2321N74-A-3770

FOLDER 3

PARTS LIST & DESCRIPTION (continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Wells-Gardner PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N60 *		1N60	1N60	Video Detector (Pigtail)

* A CK706A may be used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	Wells-Gardner PART No.	NOTES
M4	Pilot Light		#51
M5	Tuner	25A1160	VHF (Standard Coil #NAS-4145)
	Tuner	25A1159	UHF (Standard Coil #NEUFS-103)
M6	Magnet	2A476	Beam Alignment
M7	Centering Device	2A435	Includes yoke rear cover
M8	Circuit Breaker	2A475	

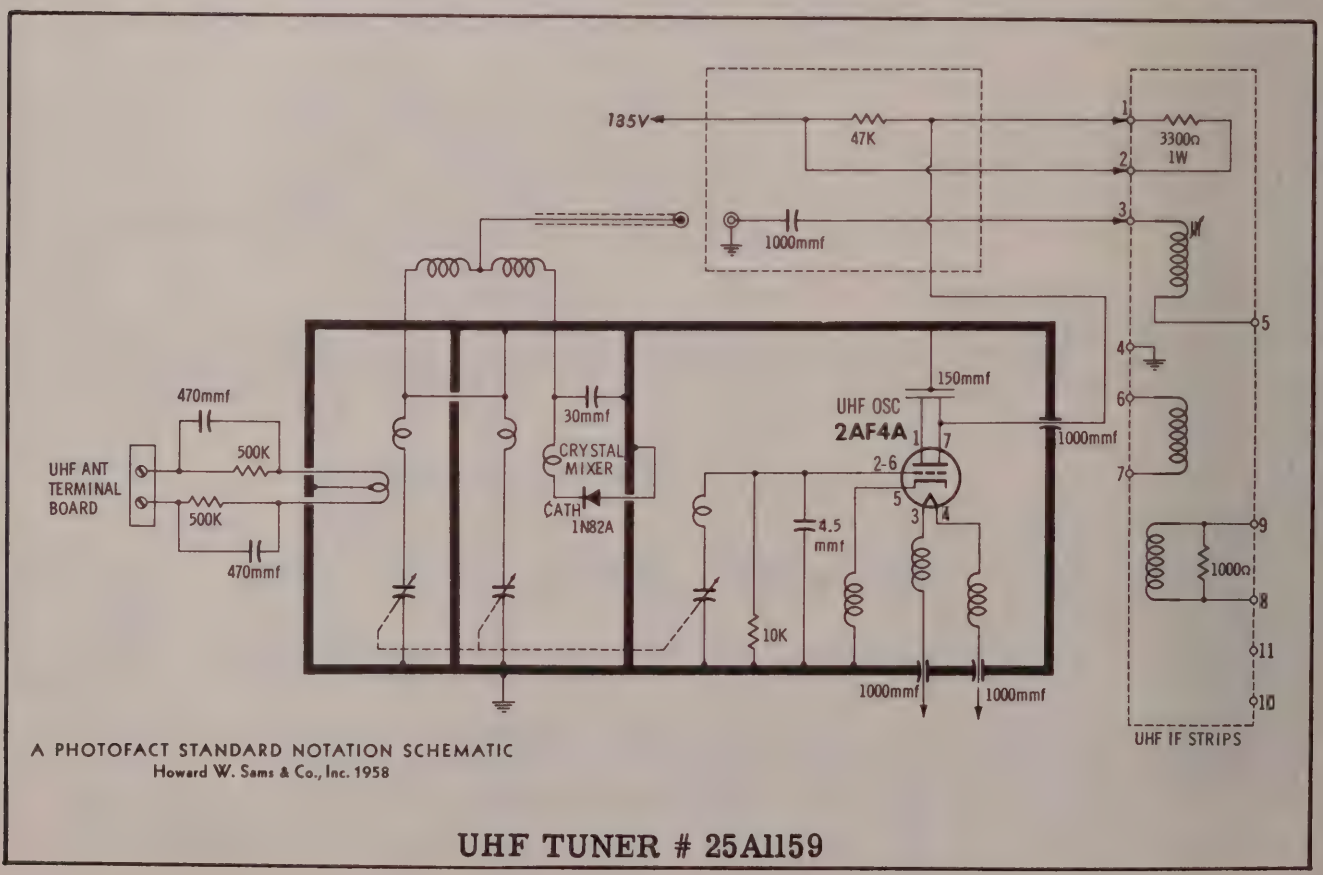
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

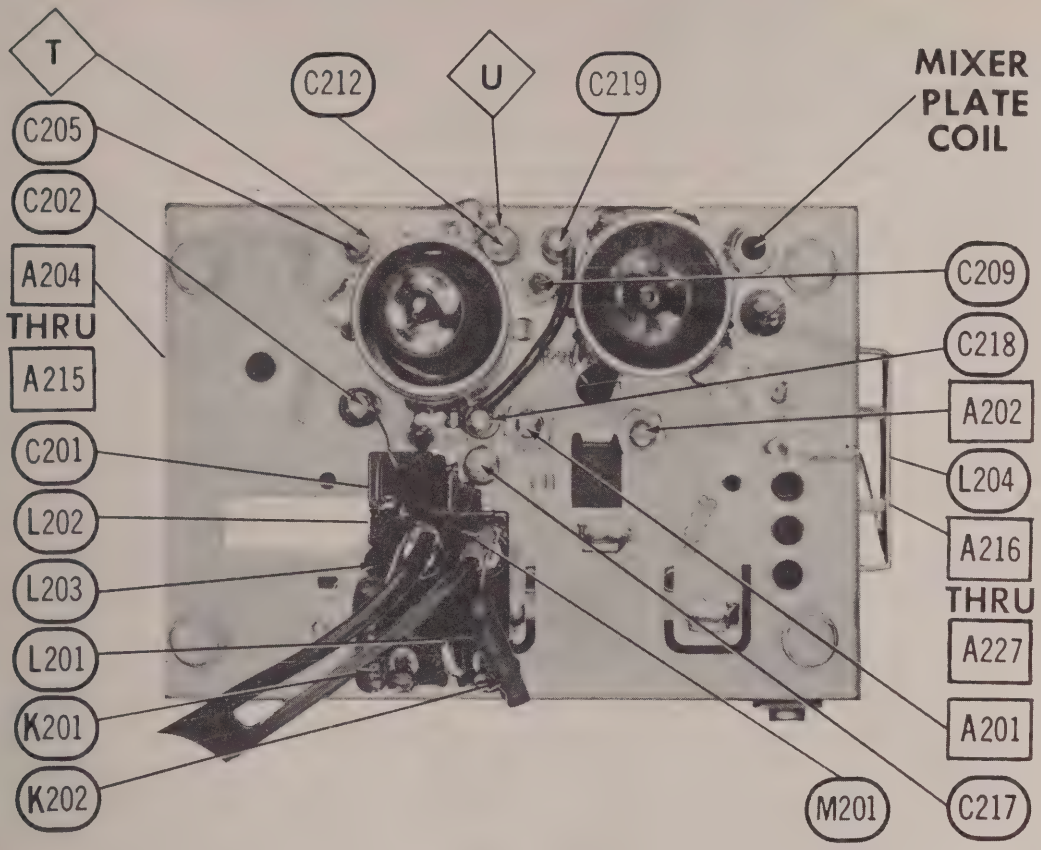
NAME	PART NO.	DESCRIPTION
Safety Glass	17X194-1	
Mask	S-38A513	
Mask	S-38A514	
Escutcheon	4X1315-2	
Drive Chain	34X602	
Knob	10A861-1	Secondary Controls
Knob	10A895-1	Fine Tuning
Knob	10A899-1	Channel Selector
Knob	10A896-1	Contrast
Knob	10A897-1	Volume

WIRING DATA

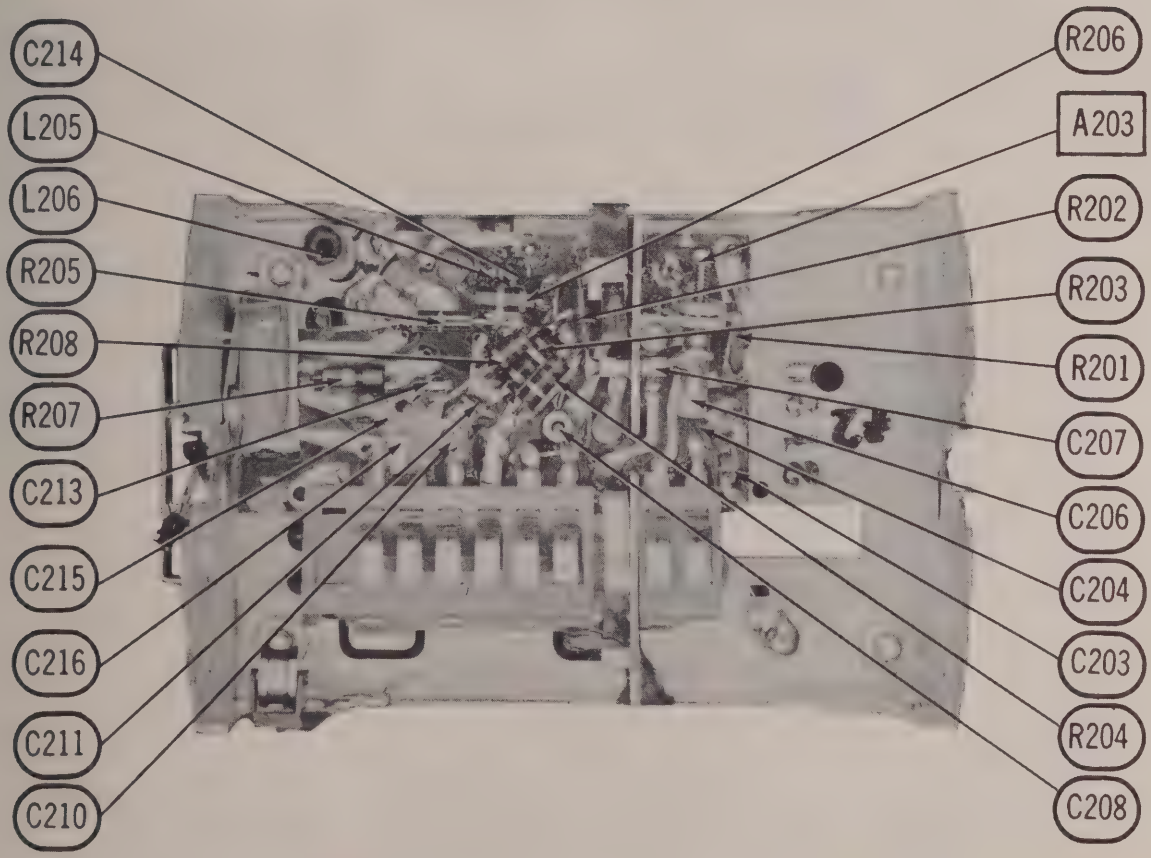
High Voltage Lead	Use BELDEN No. 8553
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



UHF TUNER # 25A1159



TUNER TOP VIEW



TUNER-BOTTOM VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

• Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		13L8DB121K	NPO-SI 120	D6-121	L10T12	ED-120		5TCC-T12	10%
C202	30		13M320EA300J-05							
C203	28		13R-005							10%
C204	12		13R-003							10%
C205	800		13M320EA801Z-04							
C206	5-10		31T-3149-02							
C207	47		13M130U470J							5%
C208	1-4.5		31B-902-07		829-6		532-B			
C209	800		13M320EA801Z-04							
C210	1-4.5		31B-902-07		829-6		532-B			
C211	47		13R-008							10%
C212	30		13M320EA300M-06							
C213	1000		13R-024							
C214	6.8		13R-014							N330 .5%
C215	3		13R-011							.3%
C216	2		13R-009							N750 .1%
C217	800		13M320EA801Z-04							
C218	800		13M320EA801Z-04							
C219	800		13M320EA801Z-04							

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R201	4700Ω			
R202	1000Ω			
R203	3900Ω			
R204	220K			

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R205	1000Ω			
R206	10K			
R207	10K			
R208	6800Ω			

COILS (RF-IF)

ITEM No.	USE	PART No.	NOTES
L201	Ant. Trans.	31T-210-01	Includes Assy.
L202	IF Trap Coil	34A-748	
L203	IF Trap	31TA-2109	
L204A	Ant., RF, Mixer Grid, Osc. Coils	31M-300-2N4A	Channel 2
B	"	31M-300-3N4A	Channel 3
C	"	31M-300-4N4A	Channel 4
D	"	31M-300-5N4A	Channel 5
E	"	31M-300-6N4A	Channel 6
F	"	31M-300-7N4A	Channel 7

ITEM No.	USE	PART No.	NOTES
L204G	Ant. RF, Mixer Grid, Osc. Coils	31M-300-8N4A	Channel 8
H	"	31M-300-9N4A	Channel 9
I	"	31M-300-10N4A	Channel 10
J	"	31M-300-11N4A	Channel 11
K	"	31M-300-12N4A	Channel 12
L	"	31M-300-13N4A	Channel 13
L205	RF Choke	25A-176-01	
L206	Mixer Plate Coil	31U-530-01	

COMPONENT COMBINATIONS

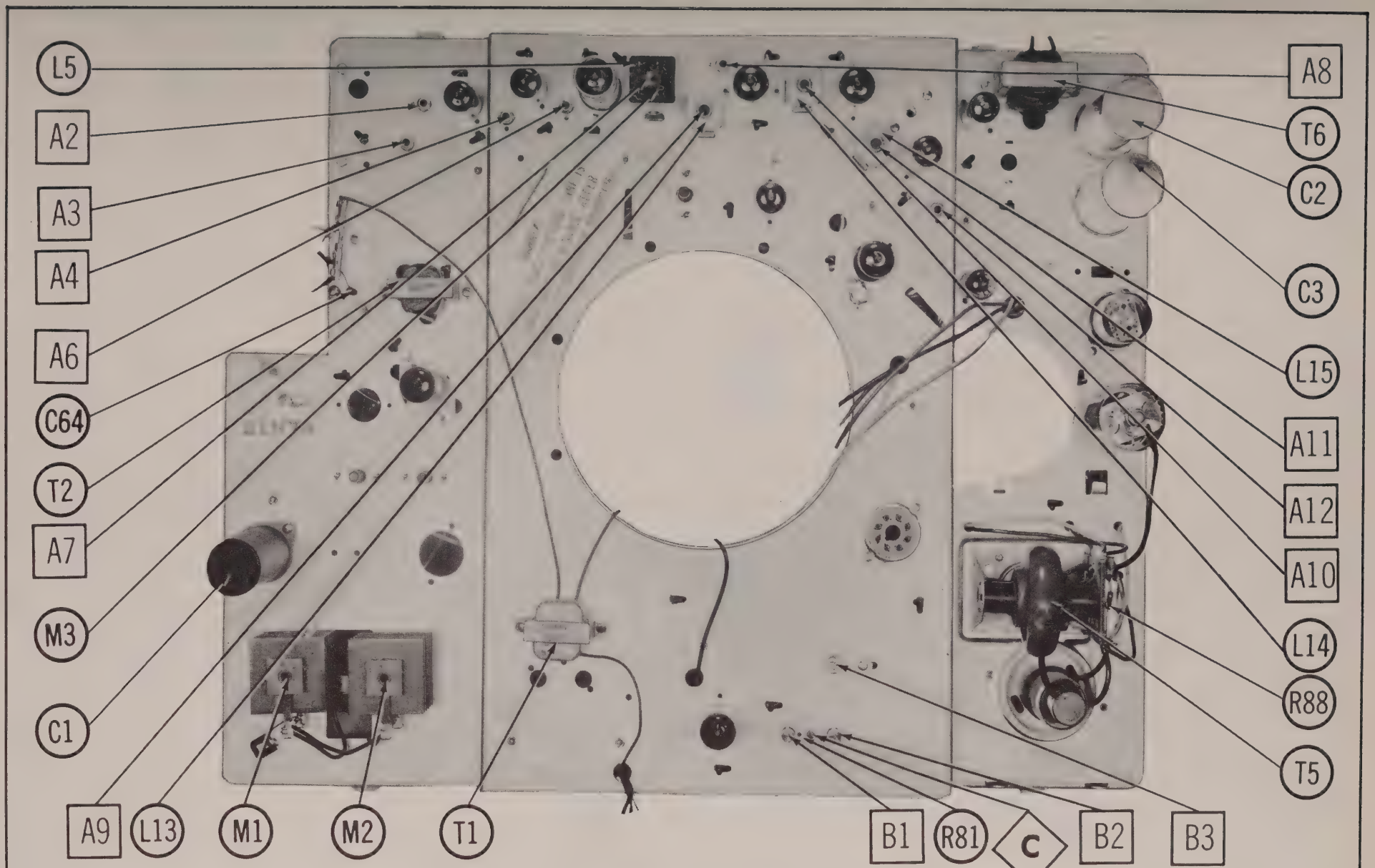
ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .3-1meg	13P-198 *	Centralab Sprague	RC-471 R-9177
K202	Antenna Isolation	470mmf, .3-1meg	13P-198 *	Centralab Sprague	RC-471 R-9177

* Alternate part #76X11.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M201	Ant. Input Assy.	31T-2107-07	Includes K201, K202, L201
	Drum Assy.	31TA-2073-171-08	Less strips
	Osc. Slug	15A266	12 Required.

NOTE: Part numbers listed above are "Standard Coil" Part Numbers.



TP1 185V HORIZ WAVEFORM TP1

CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	500K	47Ω	12Ω	13Ω	†2100Ω	†2100Ω	0Ω		
V2	3BZ6	490K	47Ω	13Ω	14Ω	†2100Ω	†2100Ω	0Ω		
V3	3CB6	.1Ω	180Ω	14Ω	15Ω	†1700Ω	†1700Ω	0Ω		
V4	5U8	†7300Ω	2Ω	†34K	15Ω	16Ω	†34K	560Ω	1.5Ω	3900Ω
V5	12BY7A	•380Ω	1meg	0Ω	19Ω	19Ω	18Ω	†3600Ω	†1200Ω	0Ω
V6	3AU6	†30K	†1200Ω	10.5Ω	11Ω	90K	†0Ω	†1200Ω		
V7	5U8	†12K	100K	†150K	16Ω	17Ω	†83K	0Ω	0Ω	47K
V8	3BN6	•220Ω	3.2Ω	9Ω	10.5Ω	†5900Ω	5.7Ω	†330K		
V9	5AQ5	0Ω	270Ω	18Ω	17Ω	†970Ω	†470Ω	0Ω		
V10	3BY6	•300K	0Ω	12Ω	11Ω	†820K	†28K	2.2meg		
V11	10DE7	†390Ω	2.2meg	2.2meg	20.5Ω	19Ω	•‡1.4meg	•770K	220Ω	•1400Ω
V12	6CG7	†56K	410K	0Ω	9Ω	8Ω	•†27K	1.5meg	410K	0Ω
V13	12DQ6A	TP	4.5Ω	NC	†10K	470K	TP	7Ω	100Ω	TOP CAP ‡10Ω
V14	12AX4GTA	TP	NC	¶	NC	†.1Ω	TP	4.5Ω	2Ω	
V15	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡300Ω
V16	21CBP4A	7Ω	1meg	PIN 6 †100K	PIN 10 ‡10meg	PIN 11 •240K	PIN 12 8Ω			
V201	2BN4	0Ω	500K	2Ω	1.5Ω	†2200Ω	0Ω	500K		
V202	5CG8	10K	†8000Ω	0Ω	0Ω	1.5Ω	†2200Ω	†11K	0Ω	220K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

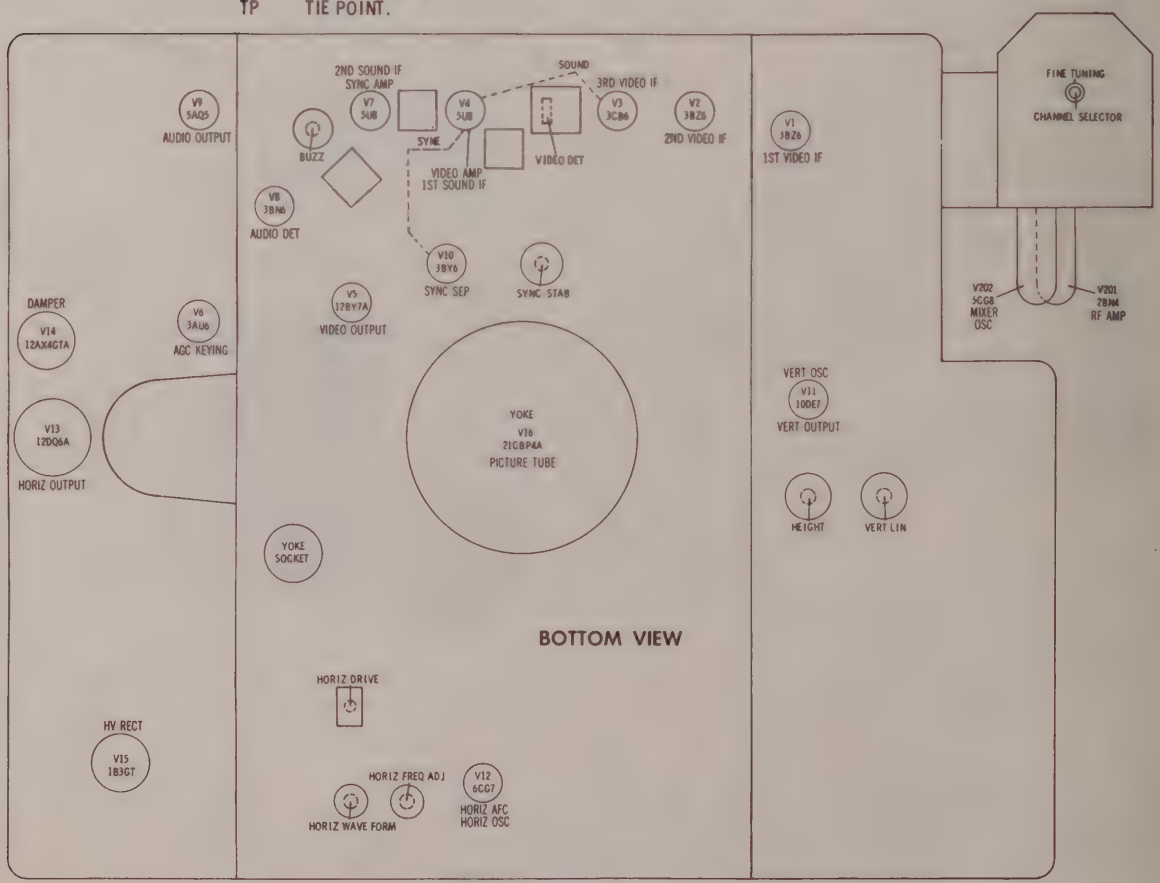
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM 250V SOURCE.

‡ MEASURED FROM PIN 3 OF V14.

NC NO CONNECTION.

TP TIE POINT.

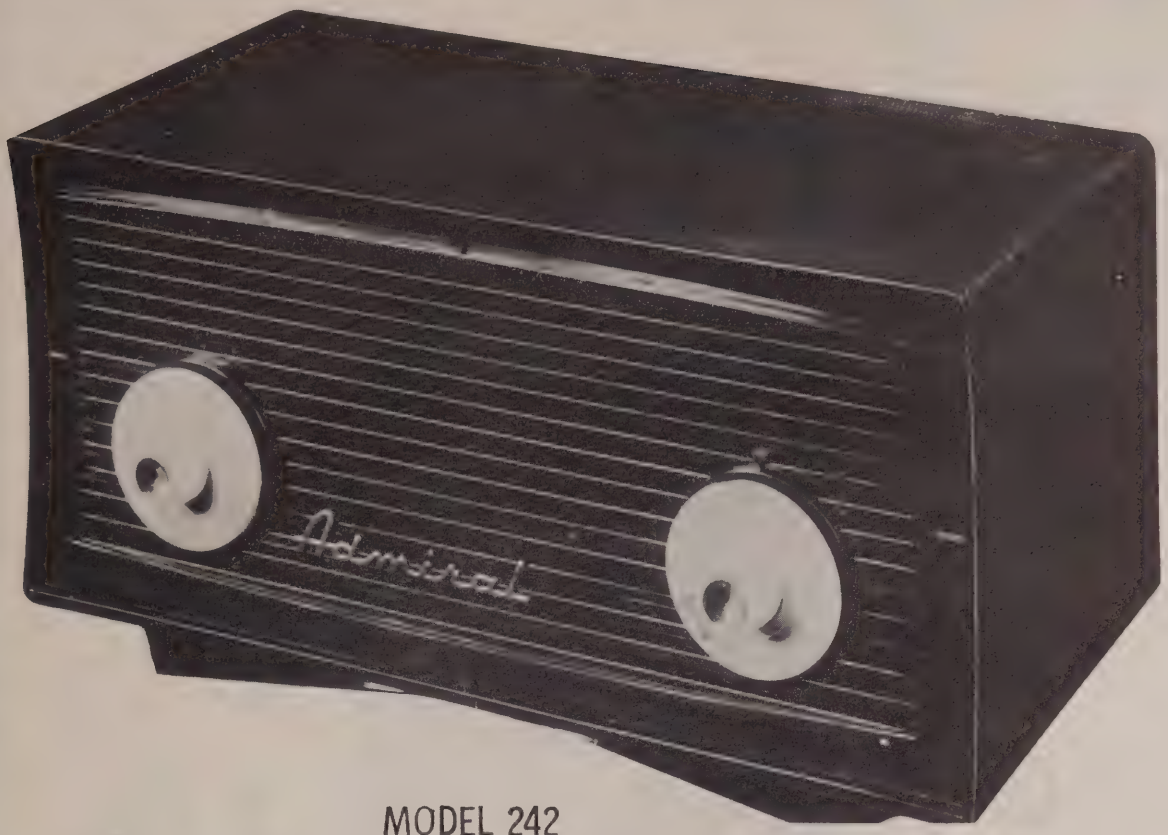


TUBE PLACEMENT CHART

PHOTOFACT* Folder

ADMIRAL MODELS 242, 244, 245, 248, 275, 278, 279 (Ch. 5B4, 5D4)

ADMIRAL MODELS 242, 244, 245, 248, 275, 278, 279 (Ch. 5B4, 5D4)



MODEL 242

ADMIRAL MODELS 242, 244, 245, 248, 275, 278, 279 (Ch. 5B4, 5D4)

TRADE NAME	Admiral Models 242, 244, 245, 248 (Ch. 5B4); 275, 278, 279 (Ch. 5D4)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC — RATING .26 Amp. @ 117 Volts AC (24 Watts)
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to antenna stator lug of tuning gang. Low side to B-	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2 and 3.

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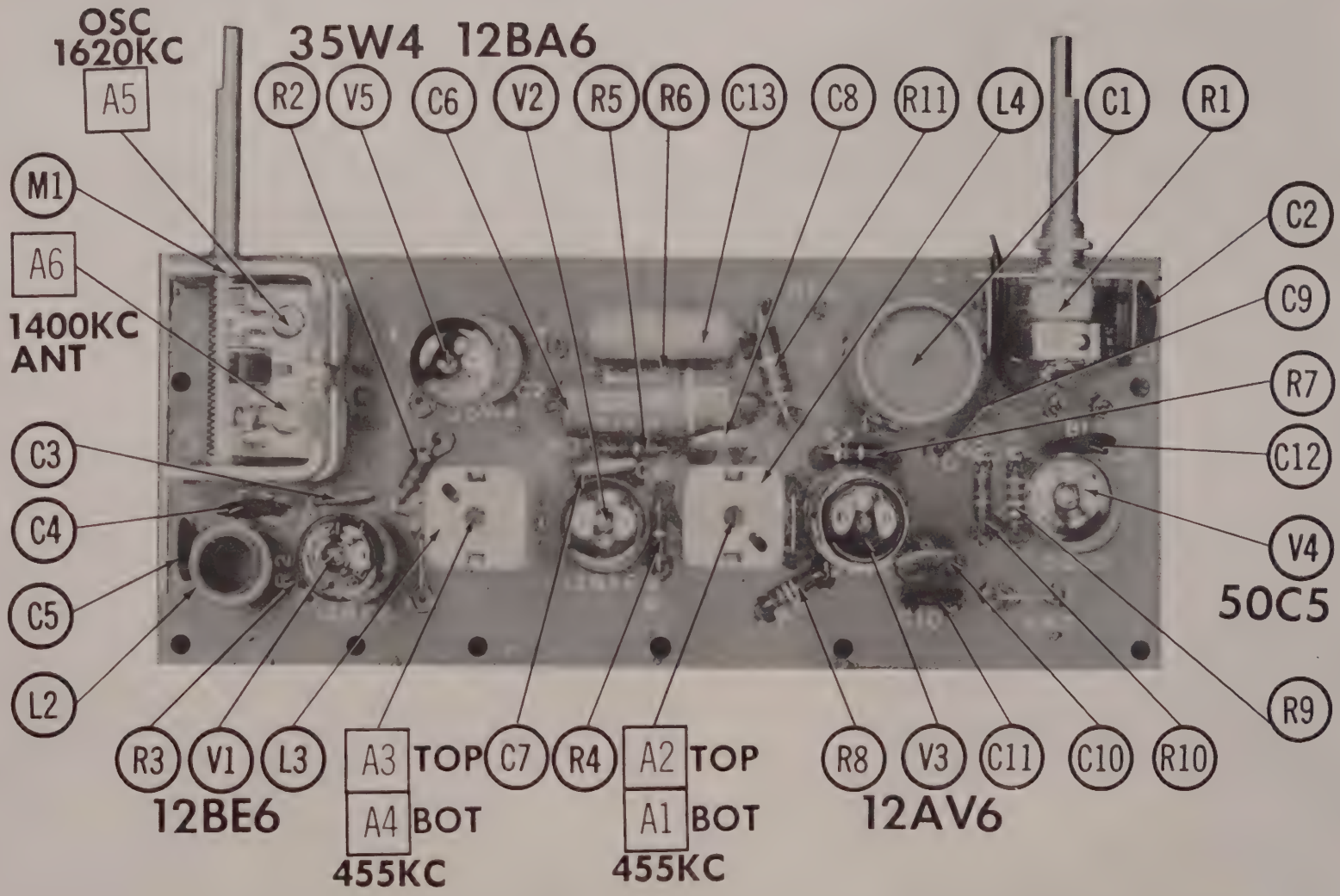
H569

SET 410 FOLDER 4



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	67C39-1 ①	PRS150V5030	BBRD53I5	TCD497	TDLD-8	FMD-301	TVA-2450
B	30	150							

① Alternate Part #67B39-1. Ch. 5D4 use 70-50mfd (Part #67B39-3).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C3	220		65C10-83						N1500
C4	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C5	47		65D10-80	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C6	.1	400	64C25-32	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C7	2000		65D10-125	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C8	220		65D10-83						N1500
C9	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C10	220		65D10-83						N1500
C11	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C12	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C13	.047	400	64B17-28	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	1/2	75C25-12					Volume , Note 1
B	Switch							

Note 1. Part #75C40-1 used in Ch. 5D4.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ADMIRAL PART No.	NOTES
	OHMS	WATT		
R2	2.2meg		60B8-225	
R3	22K		60B8-223	
R4	1500Ω		60B8-152	
R5	68Ω		60B8-680	
R6	1meg		60B8-105	
R7	4.7meg		60B8-475	
R8	270K		60B8-274	
R9	470K		60B8-474	
R10	150Ω		60B8-151	
R11	1200Ω	1	60B14-122	Note 1

Note 1. Ch. 5D4 uses 390Ω 2W in this application (Part #60B20-391).

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2500Ω	3-4Ω	Part of SP1	Z1101	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	78B84-7 ①	4A07	① Used in Ch. 5B4
	4" x 6"	PM	3-4Ω	78B141-1 ②		② Used in Ch. 5D4

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	69B228-1					
L2	Osc. Coil	69A217-1					
L3	Input IF	72C170-2	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	72C170-2	16-6780	BC-357	13-PC10	RF-4	

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	Tuning Cap.	68B66-5	2 Gang, Ch. 5B4
	Tuning Cap.	68B66-6	2 Gang, Ch. 5D4
	Lamp	8IA1-8	#47, Ch. 5D4
	Printed Board	14E216-1	

CABINETS & CABINET PARTS

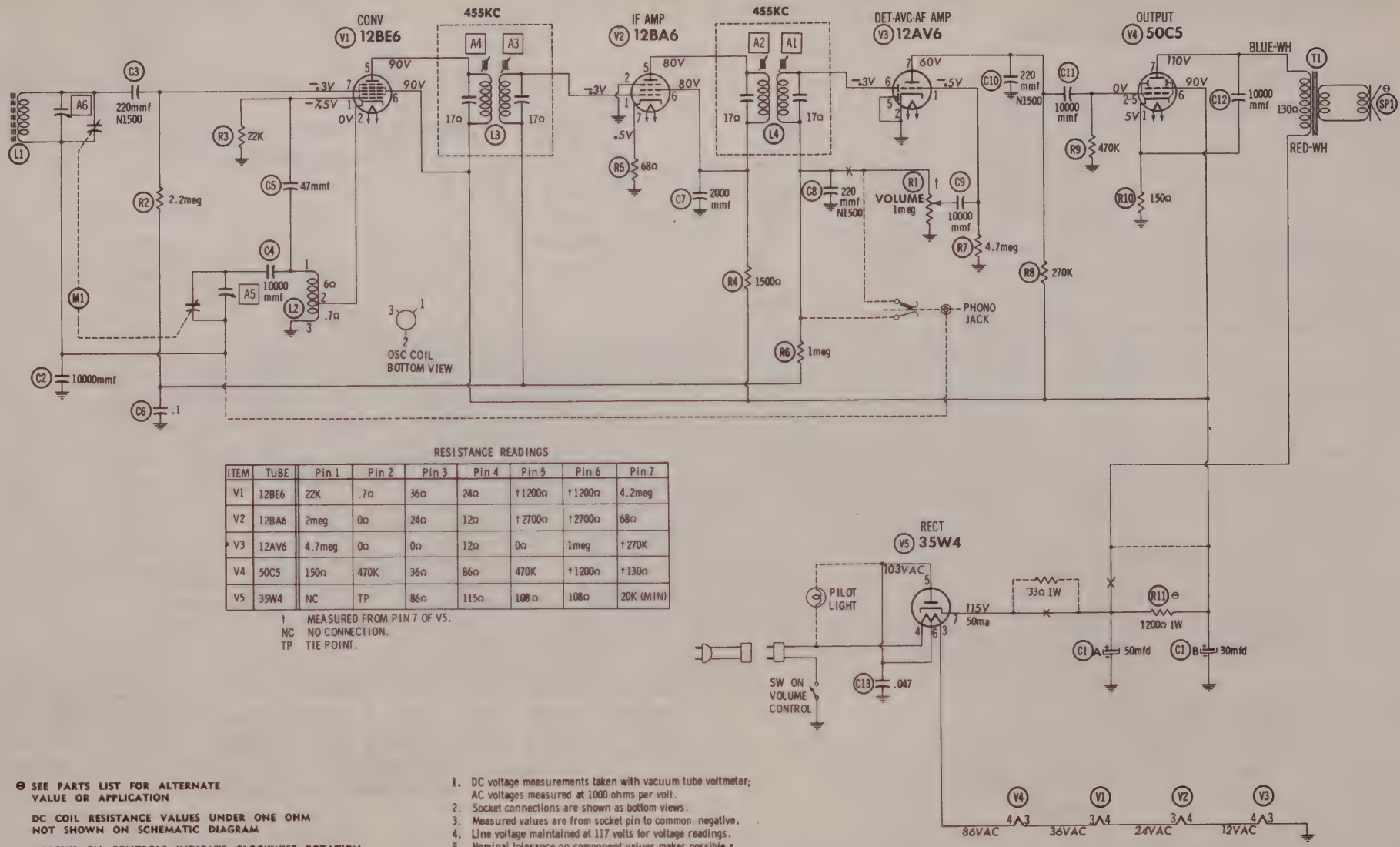
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	33C226-2	Tuning, Includes Compression Ring, Models 242, 244, 245, 248
Knob	33C226-1	On-Off-Volume, Includes Compression Ring, Models 242, 244, 245, 248
Knob	33C253-2	Tuning, Includes Compression Ring, Models 275, 278, 279
Knob	33C253-3	On-Off-Volume, Includes Compression Ring, Models 275, 278, 279
Cabinet	34D129-6	Maroon, Model 242
Cabinet	34D129-8	Pink, Model 244
Cabinet	34D129-7	Red, Model 245
Cabinet	34D129-9	Green, Model 248
Cabinet	34D125-4	Red, Model 275
Cabinet	34D125-5	Green, Model 278
Cabinet	34D125-6	Gray, Model 279
Cabinet Front	34D119-2	Maroon, Model 242
Cabinet Front	34D119-1	White, Models 244, 245, 248
Cabinet Front	A9013	Includes Decorative Rings and Strip, Pilot Lamp Jewel and Monogram, Models 275, 278, 279
Pointer	33C253-1	Dial, Models 275, 278, 279

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.7Ω	36Ω	24Ω	†1200Ω	†1200Ω	4.2meg
V2	12BA6	2meg	0Ω	24Ω	12Ω	†2700Ω	†2700Ω	68Ω
V3	12AV6	4.7meg	0Ω	0Ω	12Ω	0Ω	1meg	†270K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1200Ω	†130Ω
V5	35W4	NC	TP	86Ω	115Ω	108Ω	108Ω	20K (MIN)

† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION.
TP TIE POINT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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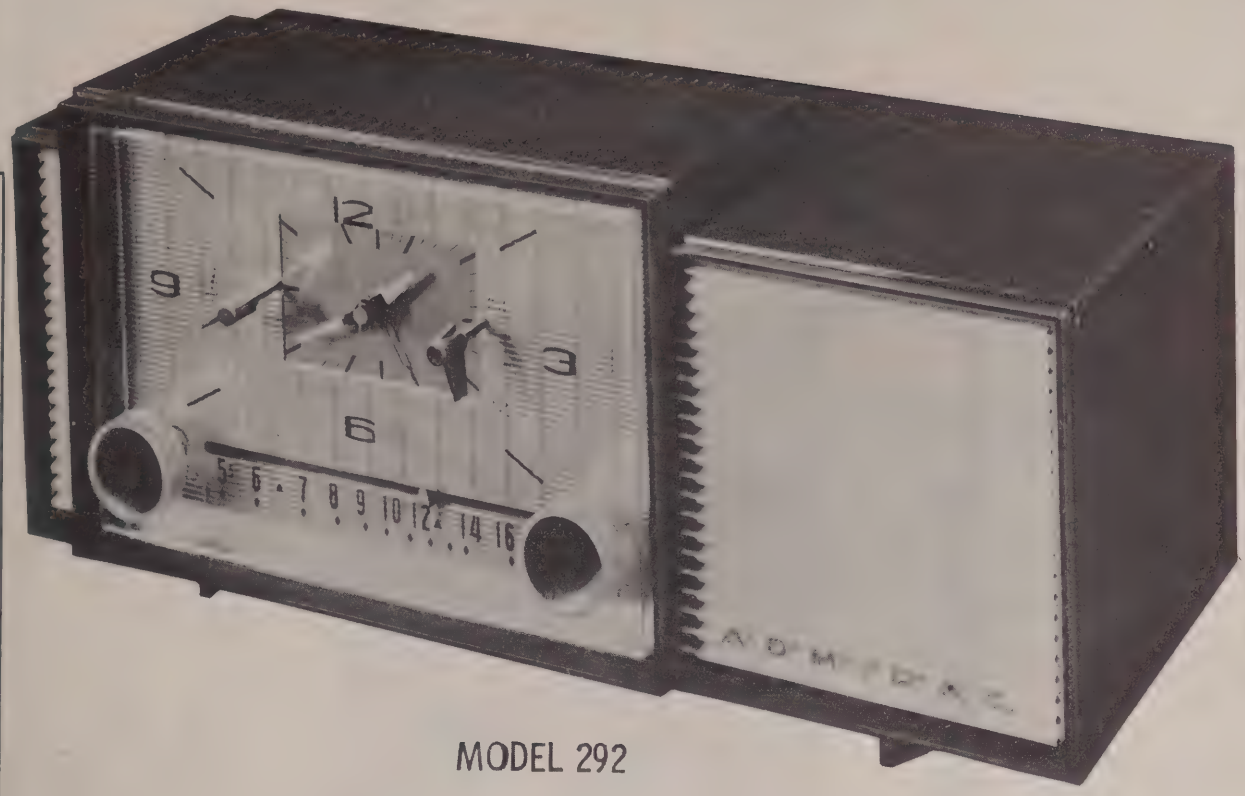
ADMIRAL MODELS
292, 296, 298,299 (Ch. 5F4)

ADMIRAL MODELS
292, 296, 298,299 (Ch. 5F4)



MODEL 292

TRADE NAME	Admiral Models 292, 296, 298, 299 (Ch. 5F4)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	AC Operated AM Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.26 Amp. @ 117 Volts AC (24 Watts Less Clock)
TUNING RANGE—BROADCAST	535 - 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to Antenna stator lug of tuning gang. Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DISASSEMBLY INSTRUCTIONS

1. Remove three screws from cabinet bottom near front.
2. Remove two screws from top rear of clock projection.
3. Remove two screws from cabinet rear.
4. Carefully work the cabinet front, left side first, until front and chassis assembly move freely.
5. Slide assembly to left to clear locking lip on right side.
6. Slide assembly out of cabinet.

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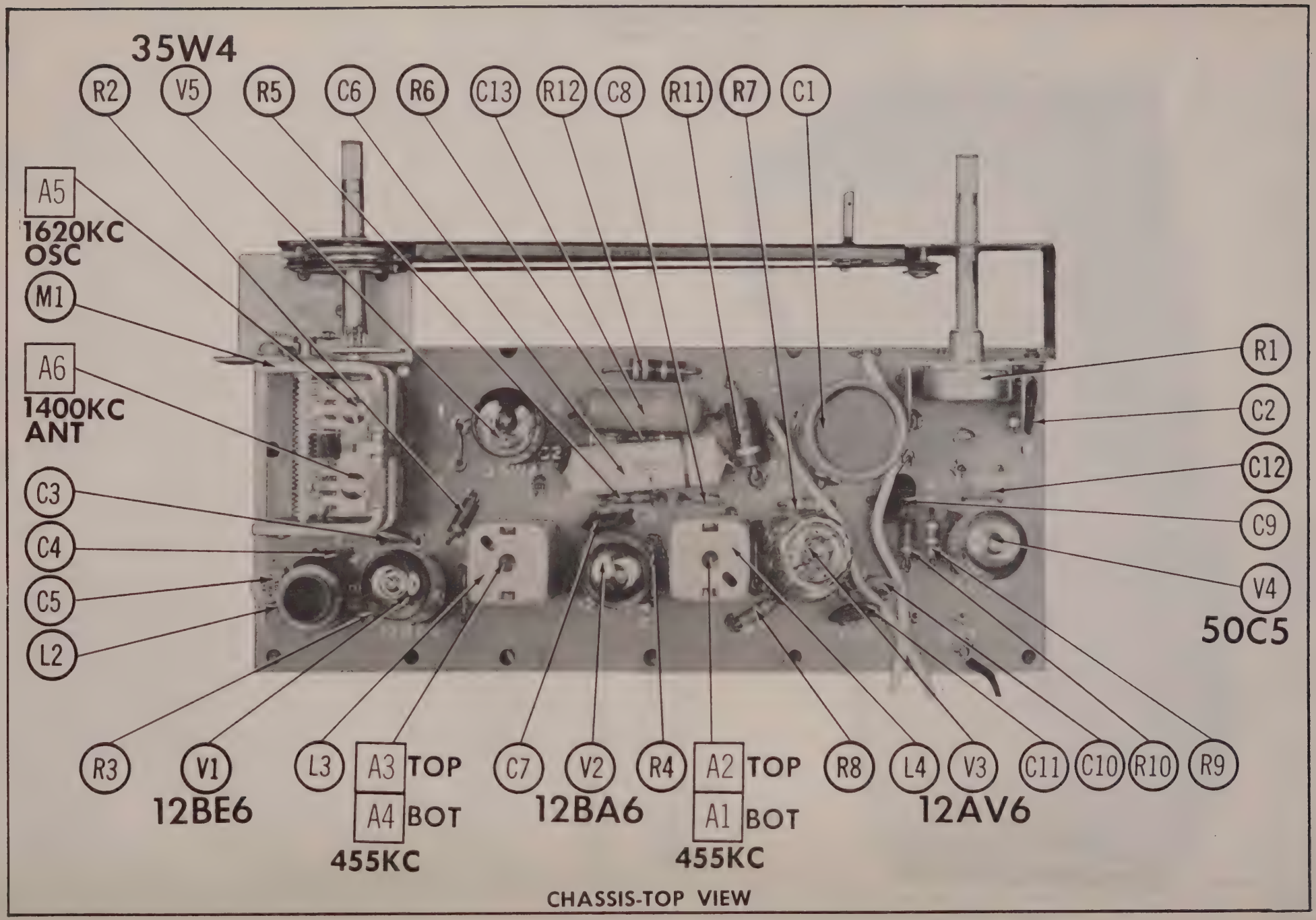
H578

SET 410 FOLDER 5



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	70	150	67C39-3	PRS150V8050	BBRD8515	TCD498	TDLD-12	FMD-303	TVA-2462
B	50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C3	220		65D10-83	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C4	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C5	47		65D10-80	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C6	.1	400	64C25-32	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C7	2000		65D10-125	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C8	220		65D10-83	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C9	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C10	220		65D10-83	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C11	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C12	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C13	.047	400	64B17-28	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg	½	75C25-14					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ADMIRAL PART No.	NOTES
	OHMS	WATT		
R2	2.2meg		60B8-225	
R3	22K		60B8-223	
R4	1500Ω		60B8-152	
R5	68Ω		60B8-680	
R6	1meg		60B8-105	
R7	4.7meg		60B8-475	
R8	270K		60B8-274	
R9	470K		60B8-474	
R10	150Ω		60B8-151	
R11	560Ω	2	60B20-561	
R12	33Ω	1	60B14-330	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2300Ω	3-4Ω	Part of SP1	Z1111	A-2928	AU-603	A-3876	22S46	S-1X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	78B84-8 ①	4A07	① Includes T1

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	69B228-1					
L2	Osc. Coil	69A217-1					
L3	Input IF	72C170-2	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	72C170-2	16-6780	BC-357	13-PC10	RF-4	

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	Tuning Cap.	68B70-1	2 Gang
M2	Clock Ass'y	91C26-1	Telechron
	Printed Board	14E216-4	

CABINETS & CABINET PARTS

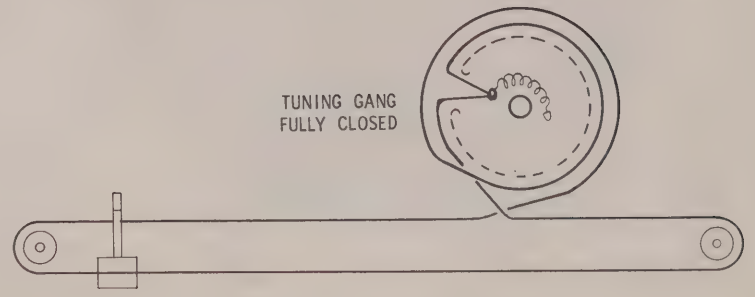
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	33A248-1	On-Off-Volume, Tuning
Knob	33A250-1	Clock
Cabinet	34D127-1	Maroon, Model 292
Cabinet	34D127-2	Yellow, Model 296
Cabinet	34D127-3	Green, Model 298
Cabinet	34D127-4	Gray, Model 299
Cabinet Front	A9017	Maroon, Model 292
Cabinet Front	A9018	Yellow, Model 296
Cabinet Front	A9019	Green, Model 298
Cabinet Front	A9020	Gray, Model 299
Dial Pointer	25A64-2	
Crystal	24C25	Clock and Radio
Dial	23B297	Background, Radio and Clock

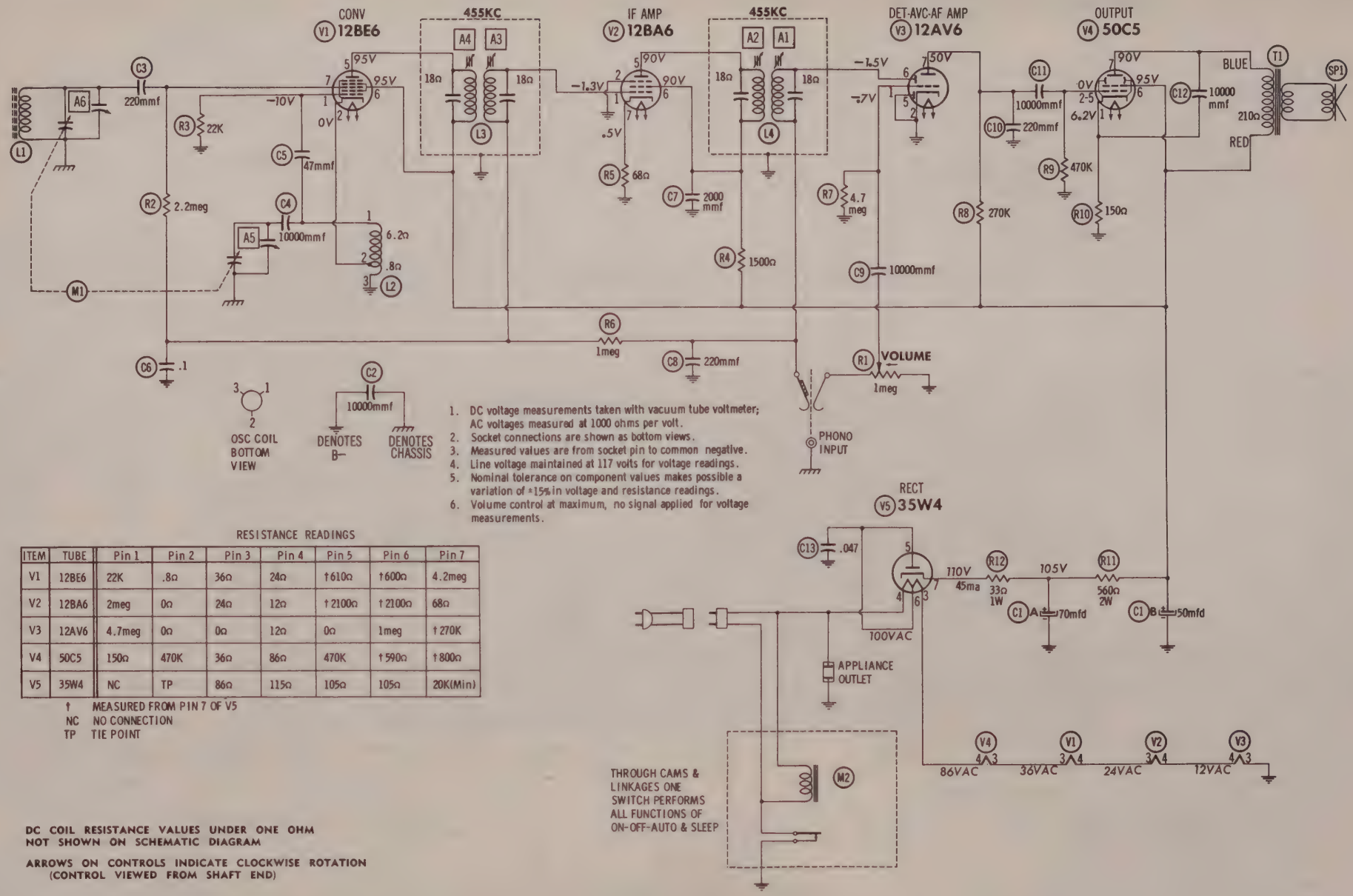
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874



DIAL CORD STRINGING



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.8Ω	36Ω	24Ω	†610Ω	†600Ω	4.2meg
V2	12BA6	2meg	0Ω	24Ω	12Ω	†2100Ω	†2100Ω	68Ω
V3	12AV6	4.7meg	0Ω	0Ω	12Ω	0Ω	1meg	†270K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†590Ω	†800Ω
V5	35W4	NC	TP	86Ω	115Ω	105Ω	105Ω	20K(Min)

† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION
TP TIE POINT

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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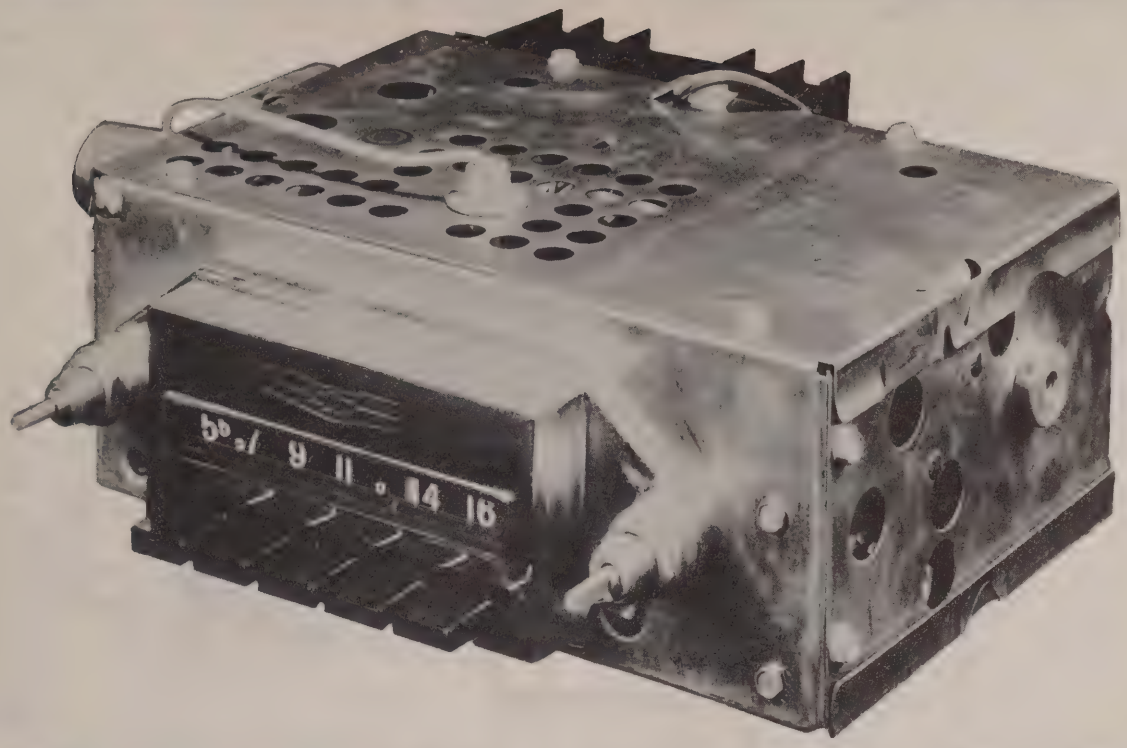

TRADE NAME	Chevrolet Model 987727 (For 1958 Chevrolet Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output
TUBES (Five)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12AF6 IF Amplifier, 12F8 Det.-AVC-1st AF Amplifier, 12K5 2nd AF Amplifier
POWER SUPPLY	12 Volt Storage Battery
RATING	1.8 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 - 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Set Tone to Treble.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262KC (400~ Mod)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
	Check setting of oscillator coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
2.	68mmf	High side to Antenna connector. Low side to chassis.	1615KC	High frequency end stop	Across voice coil	A6, A7, A8	Adjust for maximum output.
3.	"	"	600KC	Tune to 600KC signal	"	A9, A10	"
4.	"	"	1615KC	High frequency end stop	"	A7, A8	"
5.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.						

POINTER ADJUSTMENT

With radio tuned to an 1100KC signal, adjust pointer adjustment so that pointer coincides with 1100KC mark on dial.

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton to the left and out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

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H586

CHEVROLET
MODEL 987727
CHEVROLET
MODEL 987727
SET 410 FOLDER 6

PARTS LIST AND DESCRIPTIONS

CHEVROLET
MODEL 987727

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12AF6	
V4	Det.-AVC-1st AF Amp.	12F8	
V5	2nd AF Amplifier	12K5	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N278	Output					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■1000	16	7270691 ①	AFH2-02-70		WP200.27			R2668 *
B	▲500	16							

① Alternate Part #7270417

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2A	7-73		7268558						
B	42								
C3	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-2122	2TM-S22	
C4	68		6369	BPD-000068	DD-680	L10Q68	UC-5468	5GA-Q68	
C5	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C6A			7268828						
B									
C									
D									
C7	200		7270129	1469-0002		5R5T2	MCE237	MS-32	5%
C8	.047	200	6612	P288N-047	DF-503	CUB2S47	GEM-4147	2SE-S47	
C9	47		6367	1468-000047	DD-470	1W5Q47	UC-5447	1FM-447	
C10	47		6367	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C11	.005	600	6631	P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C12	.1	50	7269714	P288N-1		BC2PW	ACE401	2SE-P10	
C13	1000		6350	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C14	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C15	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C16	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C17	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C18	.05	200	6612	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C19A	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
B	220			BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C20	.47	50	7269780	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C21A			1220885						
B									

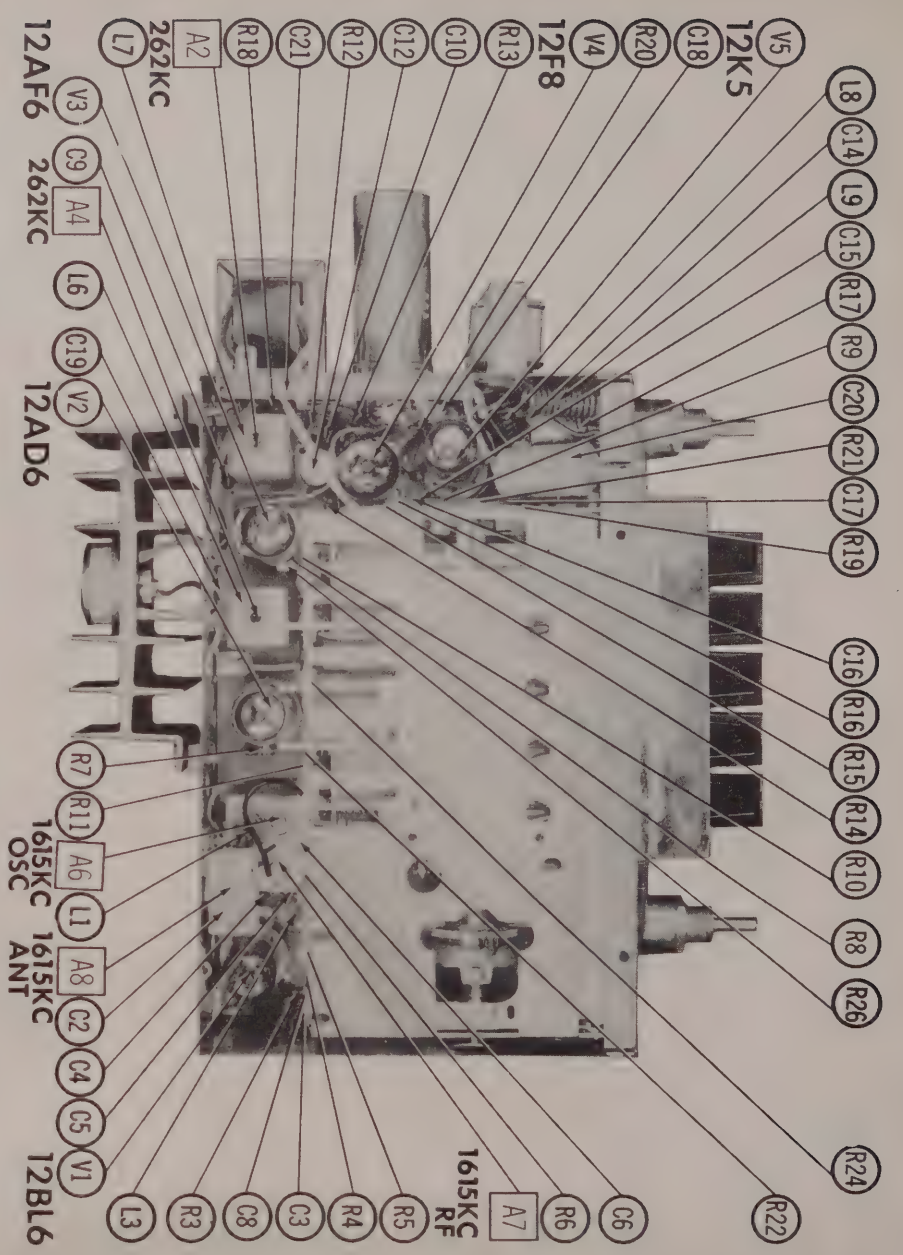
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	5meg		7270479 ①				■UE3815-S	Tone
B	5meg							Volume, Tap @ 1meg
C	Switch							
R2	100Ω	2(WW)	7269637		39-100		FL-150	Transistor Bias

① Alternate Part #1221118

■ "STA-LOC" Equivalent: FF56A, OS1250, RU56T16, IS1687, US-42

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	DELCO PART No.	NOTES
R3	1.5meg		1237	
R4	10K		1137	
R5	1.5meg		1237	
R6	680K		1233	
R7	33K		1217	
R8	2.2meg		1239	
R9	3.3meg		1241	
R10	12meg			①
R11	4.7meg		1243	②
R12	560K		1232	
R13	1000Ω		1125	
R14	12K		1212	
R15	270K		1228	
R16	120K		1224	
R17	270K		1228	
R18	47K		1219	
R19	470K		1231	
R20	33Ω		1107	
R21	22Ω		1105	
R22	.47Ω	2	7270608	③
R23	10Ω		1101	
R24	100Ω	2	1187	
R25	150Ω	1	1152	
R26	100Ω		1113	

① Some versions may use 4.7meg in this application (Part #1243).
② Some versions may use 1.8meg in this application (Part #1238).
③ Fuse & temperature compensating unit, .36Ω @ room temperature.

TRANSFORMER (INTERSTAGE)

ITEM No.	Turns Ratio PRI.	Turns Ratio SEC.	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	50	: 1	7269877				TA-48			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	10.9Ω	3-4Ω	7270627							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA DELCO PART No.	QUAM PART No.	NOTES
SP1	6" X 9"	PM	3-4Ω	7270531	69A3	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Antenna Coil	7255738	19-1004	BC-565	4610		6.5 Microhenries
L2	Antenna Coil	1221138					
L3	RF Choke	7269684					1772 Microhenries
L4	RF Coil	1221138					
L5	Osc. Coil	1221151					
L6	Input IF	1221015	16-6756	BC-317	13-PH1		
L7	Output IF	1221021		BC-318			
L8	Hash Choke	1217846					
L9	Fil. Choke	1217846					

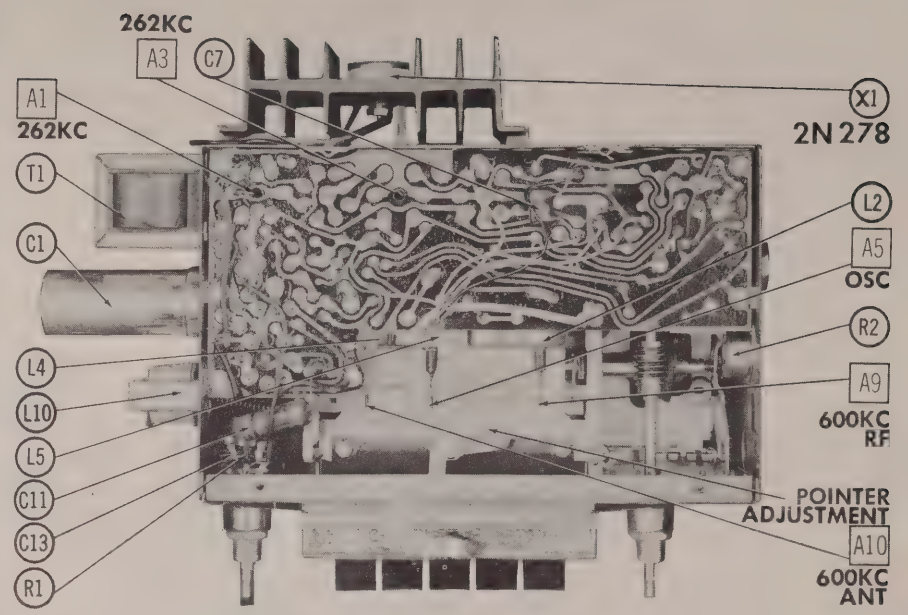
FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L10	.92A	.75Ω	.011 Hy.	7271321						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA DELCO PART No. FUSE	DELCO PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	AGC	4A 32V	7270059					

CHASSIS—BOTTOM VIEW



MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Dial Lamp		#1891
	Printed Board	7271333-E	
	Speaker Ass'y	Model 987765	Complete, For 6" X 9" Rear Seat Speaker Installation
	Speaker Ass'y	Model 987766	Complete, For Round 6" Rear Seat Speaker Installation

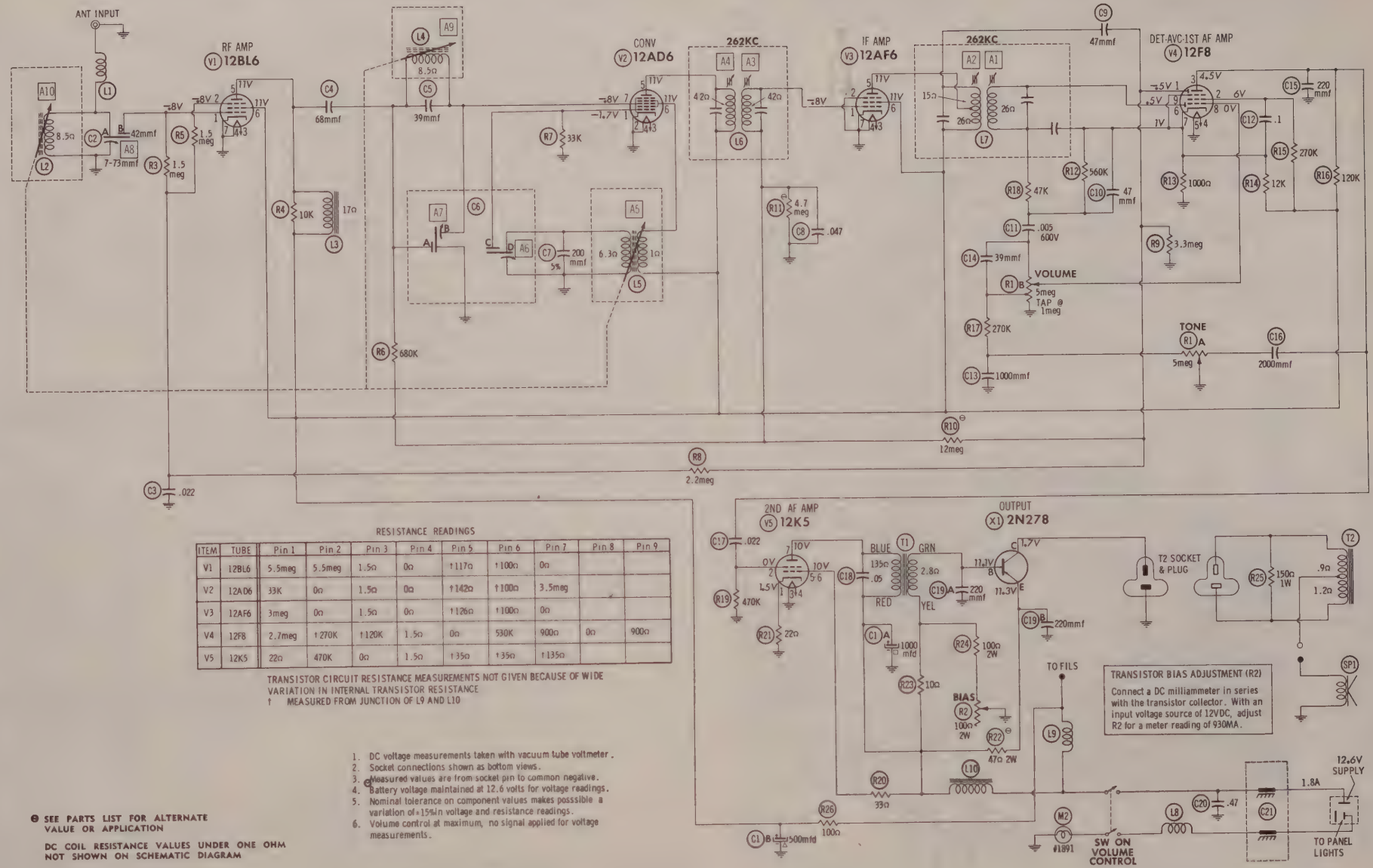
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	7270288	Tone
Knob	7270289	Dummy
Knob	1990894	Control
Pushbutton	1221120	Five used, incl. front bearing plate and slides
Dial Pointer	7270456	
Dial	7270397	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	5.5meg	5.5meg	1.5Ω	0Ω	†117Ω	†100Ω	0Ω		
V2	12AD6	33K	0Ω	1.5Ω	0Ω	†142Ω	†100Ω	3.5meg		
V3	12AF6	3meg	0Ω	1.5Ω	0Ω	†126Ω	†100Ω	0Ω		
V4	12F8	2.7meg	†270K	†120K	1.5Ω	0Ω	530K	900Ω	0Ω	900Ω
V5	12K5	22Ω	470K	0Ω	1.5Ω	†35Ω	†35Ω	†135Ω		

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE
† MEASURED FROM JUNCTION OF L9 AND L10

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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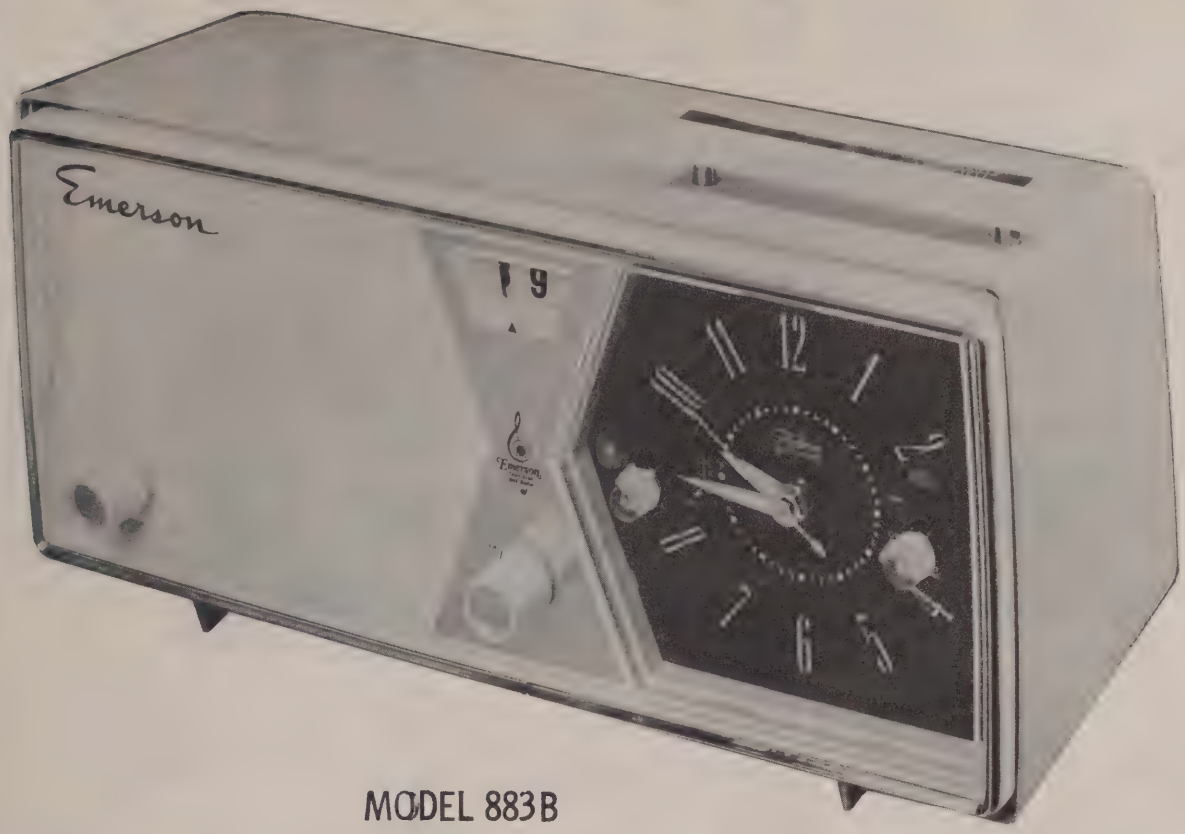
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

EMERSON MODELS 876B, 881B, 882B, 883B, 884B (Ch. 120372B, 120373B, 120398B)

EMERSON MODELS 876B, 881B, 882B, 883B, 884B (Ch. 120372B, 120373B, 120398B)



MODEL 883B

TRADE NAME	Emerson Models 876B (Ch. 120398B), 881B (Ch. 120373B), 882B, 883B, 884B (Ch. 120372B)
MANUFACTURER	Emerson Radio & Phono Corp., 14th & Coles Streets, Jersey City 2, N. J.
TYPE SET	AC Operated AM Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 (or) 12AT6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles — RATING .25 Amp. @ 117 Volts AC (27 Watts Less Clock)
TUNING RANGE—BROADCAST	540 - 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.005mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"

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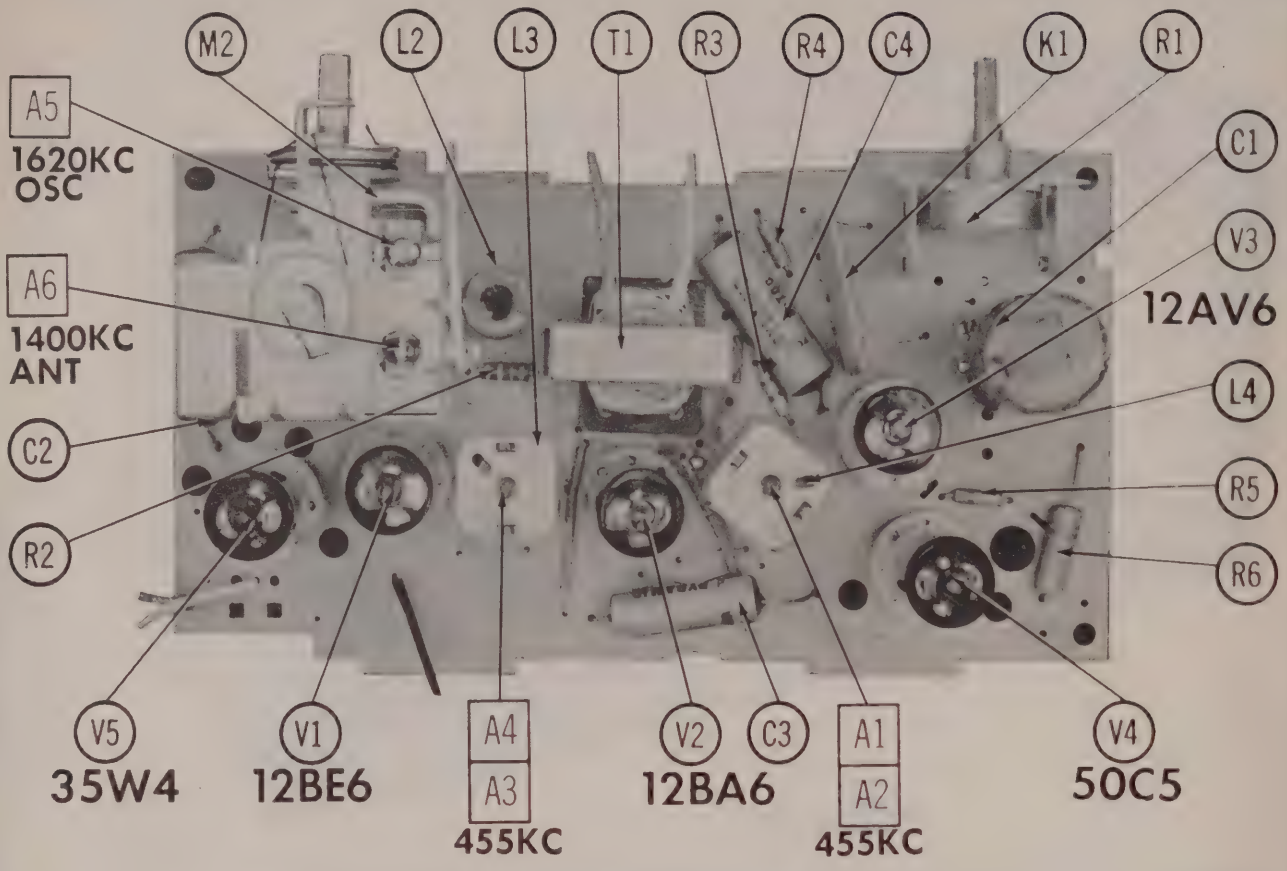
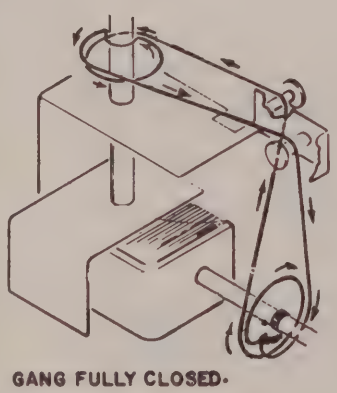
H537

SET 410 FOLDER 7

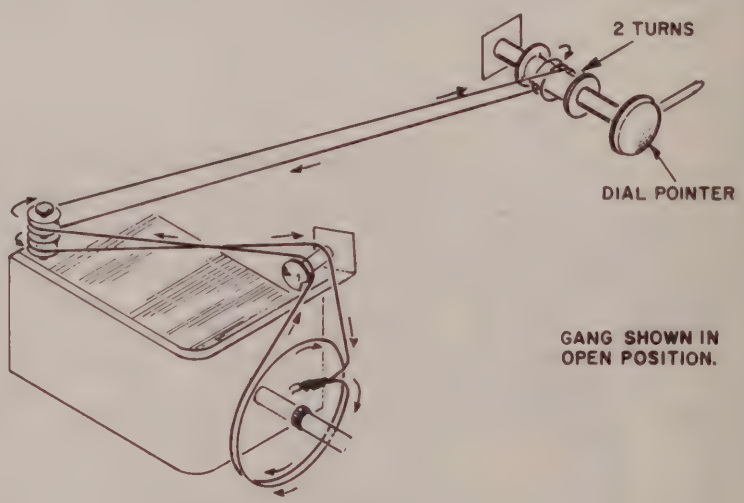


CHASSIS-TOP VIEW



GANG FULLY CLOSED.

Models 882B, 883B, & 884B



GANG SHOWN IN OPEN POSITION.

Model 876B

DIAL CORD STRINGING

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	Note 1
V4	Output	50C5	
V5	Rectifier	35W4	

Note 1. Some versions may use type 12AT6.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	925402 ①	PRS150V5030	BBRD5315	TCD497	TDLD-8	FMD-301	TVA-2450
B	30	150							

① Alternate Part #925372.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.047	400	923554	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C3	.022	400	923524	P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C4	.047	400	923554	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES	
	RESISTANCE	WATTS	EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.		
R1	500K	½	390495					Volume	Note 1

Note 1. Part #390541 (Volume With Switch) used in Chassis 120398B.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		EMERSON PART No.	NOTES
	OHMS	WATT		
R2	22K		340812	
R3	120Ω		340272	
R4	2.2meg		351292	
R5	150Ω		340292	
R6	1500Ω	1	380532	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2100Ω	3-4Ω	734193 ①	Z1101 ③	A-3025 ③	AU-605 ③	A-3332 ③	24S53 ③	S-12X ③	① Used in Chassis 120372B, 120398B ② Used in Chassis 120373B ③ Use original channel frame
	2300Ω	3-4Ω	734138 ②	Z1101 ③	A-3025 ③	AU-605 ③	A-3332 ③	24S53 ③	S-12X ③	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	EMERSON PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	180176 ①	4A07	① Used in Models 882B, 883B, 884B, 876B
	4"	PM	3-4Ω	180149 ②	4A07	② Used in Model 881B

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		EMERSON PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Antenna	700131					Includes cabinet back
L2	Osc. Coil	716119					
L3	Input IF	720294	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	720295	16-6780	BC-357	13-PC10	RF-4	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	EMERSON PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	220mmf, 2000mmf, 5000mmf, 500mmf, 6.8meg, 470K, 470K	923041	

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M1	Lamp	807004	#TS43, Model 883B
M2	Tuning Cap.	900174	2 Gang (Ant. 20-320mmf) Chassis 120372B
	Tuning Cap.	900173	Chassis 120373B
	Tuning Cap.	900176	Chassis 120398B
M3	Switch	510129	Lamp, Slide Type, Model 883B
M4	Clock	471030	Timer, Model 883B
	Clock	471044	Timer, Models 882B, 884B
	Clock	471019	Timer, Model 881B
	Printed Board	630216	

CABINETS & CABINET PARTS

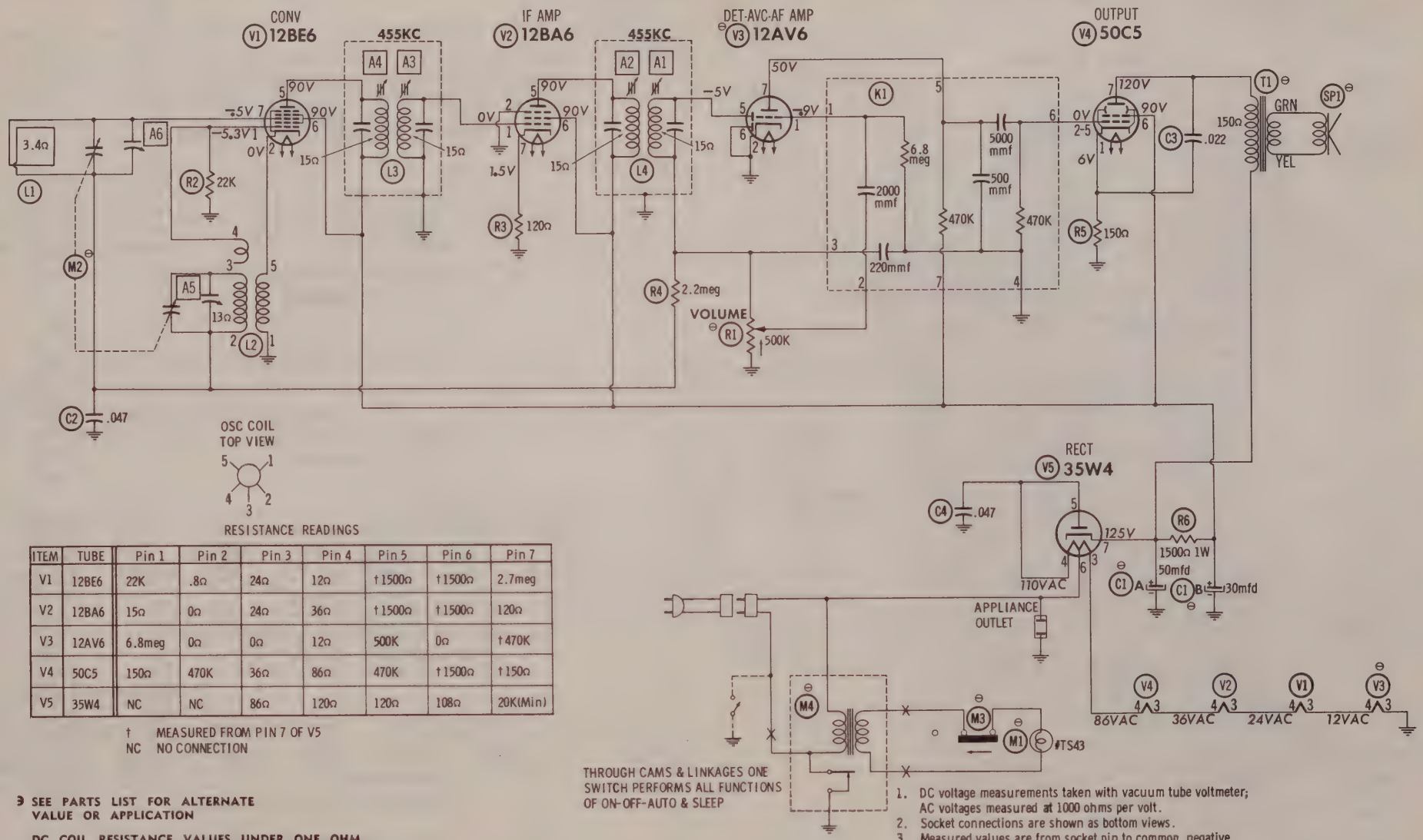
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	460926	Tuning, Model 881B
Knob	460770L	Volume and Tuning, Models 883B, 884B, 882B, 876B
Knob	460770L	Volume, Model 881B
Knob	460509B	Timer, Model 881B
Knob	460625	Timer, Models 882B, 883B, 884B
Cabinet Front	460934	Models 883B, 884B
Cabinet Front	460887	Model 882B
Cabinet Front	460910	Model 881B
Cabinet Front	460970	Model 876B
Crystal	460902	Models 882B, 883B, 884B
Crystal	460967	Model 876B
Crystal	520252	Model 881B
Disc.	460912	Lazy Susan, Model 884B

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.8Ω	24Ω	12Ω	†1500Ω	†1500Ω	2.7meg
V2	12BA6	15Ω	0Ω	24Ω	36Ω	†1500Ω	†1500Ω	120Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	500K	0Ω	†470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1500Ω	†150Ω
V5	35W4	NC	NC	86Ω	120Ω	120Ω	108Ω	20K(Min)

† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION

3 SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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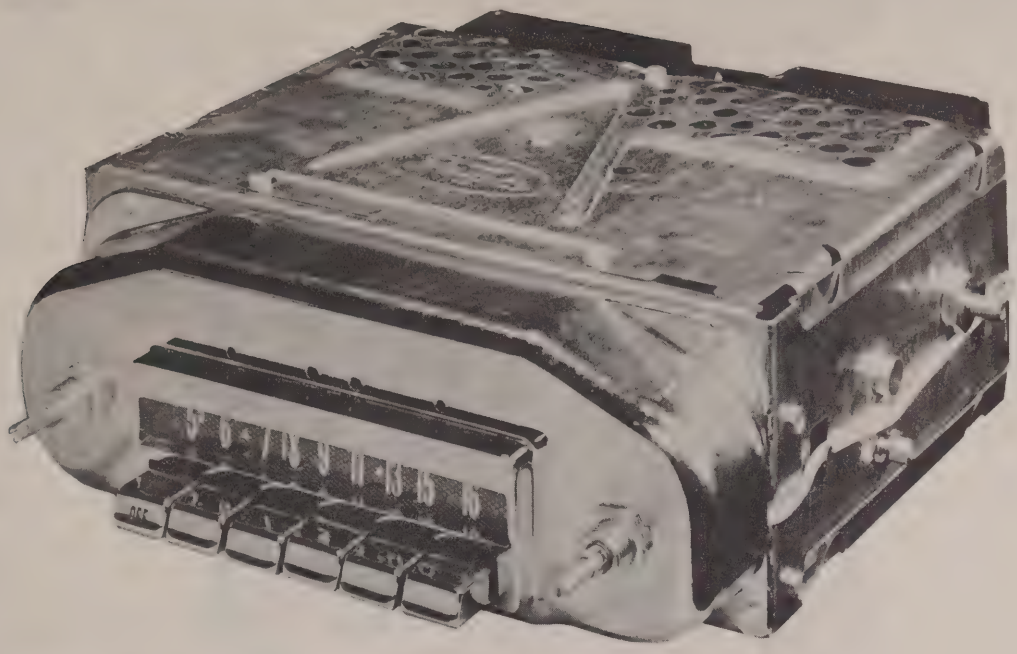
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MERCURY
MODEL 84BM (FEW-18805-U)

MERCURY
MODEL 84BM (FEW-18805-U)



TRADE NAME	Mercury Model 84BM (FEW-18805-U) For 1958 Mercury Automobiles
MANUFACTURER	Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Maryland
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output
TUBES (Four)	Types 12CX6 RF Amplifier, 12AD6 Converter, 12CX6 IF Amplifier, 12J8 Det.-AVC-AF Amp.
POWER SUPPLY	12 Volt Storage Battery — RATING 1.4 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400∿ Mod)	High Freq. End Stop	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1605KC	"	"	A5, A6, A7	"
3.	With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.						
	The following steps are not necessary unless tuner has been tampered with or associated components have been replaced. Back tuning cores A8, A9, A10 out of coils but not out of coil forms.						
4.	Fig. 1	Thru dummy to antenna receptacle.	1605KC	High Freq. End Stop	Across Voice Coil	A5, A6 A7	Adjust for maximum output.
5.	"	"	1200KC	Carriage .285" from High End Stop	"	A8, A9, A10	Adjust for maximum output. Repeat steps 4 and 5.

PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station.
2. Pull out pushbutton, then press in firmly.
3. Repeat for remaining buttons.

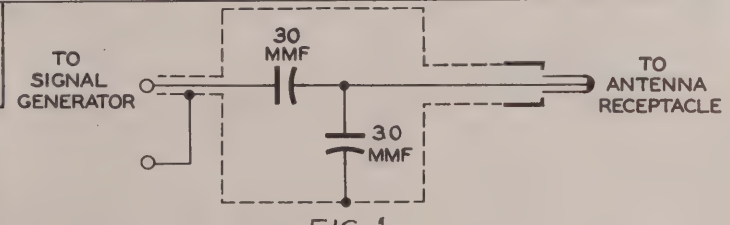


FIG. 1

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H600

SET 410 FOLDER 8

PARTS LIST AND DESCRIPTIONS

MERCURY
MODEL 84BM (FEW-18805-U)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12CX6	
V2	Converter	12AD6	
V3	IF Amplifier	12CX6	
V4	Det.-AVC-AF Amp.	12J8	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N236B	Output	CBS-2N236B			2N235A	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■250	16	220353-4	AFH2-02-05					R2564 *
B	▲250	16							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	4-75		219083-1						
C3	120		220348-407	1469-00012	DTZ-120	22R5T12		MS-312	5%
C4	33	500	220332-19	N750-DI 33	TCN-33	C10Q33U	NT-5433	5TCU-Q33	N750 10%
C5	.05	100	2090059A-503Y	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C6A	120-450								
B	370-445	150	219092-2						
C	100								
C7	750	500	220332-27	DI 750	DD-751	L10T75	UC-5375	5GA-T75	
C8	100	500	220332-14	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C9	51	500	220332-16			C10Q51U			N750 10%
C10	68	500	220332-12	BPD-000068	DD-680	L10Q68	UC-5468	5GA-Q68	
C11	22	500	220332-30	BPD-000022	DD-220	L10Q22	UC-5422	5GA-Q22	
C12	.003	100	2090059A-302M	P288N-003	D6-302	CUB6D3	GEM-623	6TM-D3	
C13	.001	100	2090059A-102M	P288N-001	D6-102	CUB6D1	GEM-421	6TM-D1	
C14	10000	500	220332-3	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C15	300		220267-12						
C16	200		220267-1						
C17	.1	100	2090059A-104Y	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	

CONTROLS

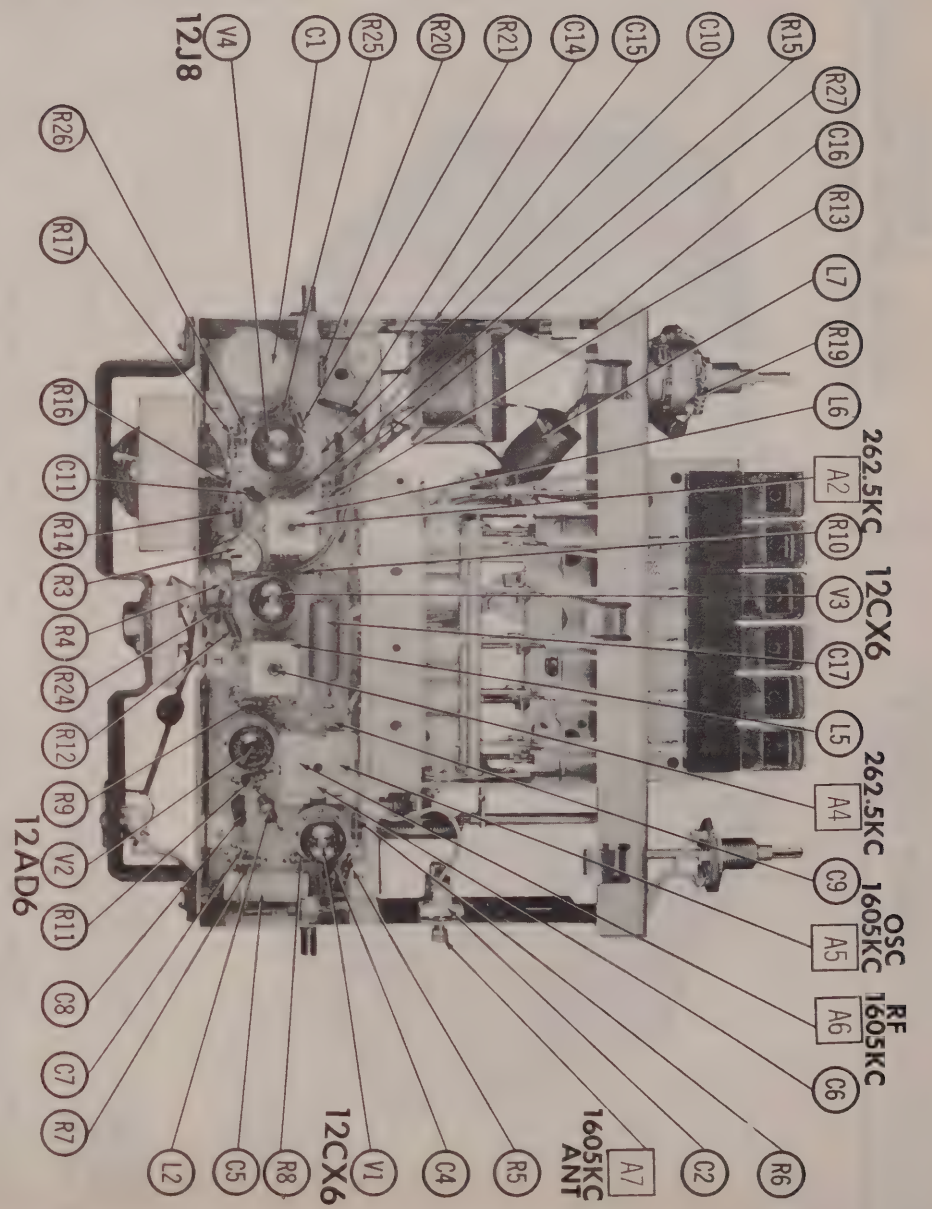
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	Switch							Tone
B	2meg	½	219689-4					Volume, Tap ③ 1meg
R2	11.5Ω	1(WW)	219679-1					Speaker Fader
R3	500Ω	1.5(WW)	219682-4					Sensitivity
R4	15Ω	1.5(WW)	2090573-3					Transistor Bias

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		BENDIX PART No.	NOTES
	OHMS	WATT		
R5	680K		220604B-684	
R6	220K		220604B-224	
R7	680Ω		220604B-681	
R8	33meg		220604B-336	
R9	27meg		220603B-276	
R10	100Ω		220604B-101	
R11	33K		220604B-333	
R12	2.2meg		220604B-225	
R13	47K		220604B-473	
R14	4.7meg		220604B-475	
R15	2.2meg		220604B-225	
R16	270Ω		220604B-271	
R17	820Ω		220604B-821	
R18	150K		220604B-154	
R19	68K		220604B-683	
R20	10meg		220604B-106	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	BENDIX PART No.	NOTES
R21	33Ω		220604B-330	
R22	150Ω	5	2090574-2	
R23			2090516-2	Note 1
R24	.33Ω		2090438-13	3" Cupron Wire
R25	47Ω		220604B-470	
R26	10K		220604B-103	
R27	1Ω		2090438-14	10" Cupron Wire

Note 1. 1000Ω 25% @ 10.5VDC.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA BENDIX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	7.5 :	1	2090576-4						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO TAP	REPLACEMENT DATA BENDIX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	2:	1	2090553-1							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA BENDIX PART No.	QUAM PART No.	NOTES
SP1	6" x 9"	PM		282634-6		Front Speaker
SP2	6" x 9"	PM		282634-8		Rear Speaker

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA BENDIX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	*					
L2	IF Trap Coil	2090088-1					50 Microhenries, wound on 18K
L3	RF Coil	*					
L4	Osc. Coil	*					
L5	Input IF	2090513-1	16-6756	BC-317	13-PH1		
L6	Output IF	2090549-1					
L7	"A" Lead Choke	216188-15					

* Part of Tuner Coil Assembly Part #2090131-12.

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Lamp	1891	#1891
M2	Tuner Ass'y.	2090550-2	Includes mounting plate and pushbuttons
M3	Switch	218669-1	On-off, DPST Type
	Printed Board	2090750-1	

CABINETS & CABINET PARTS

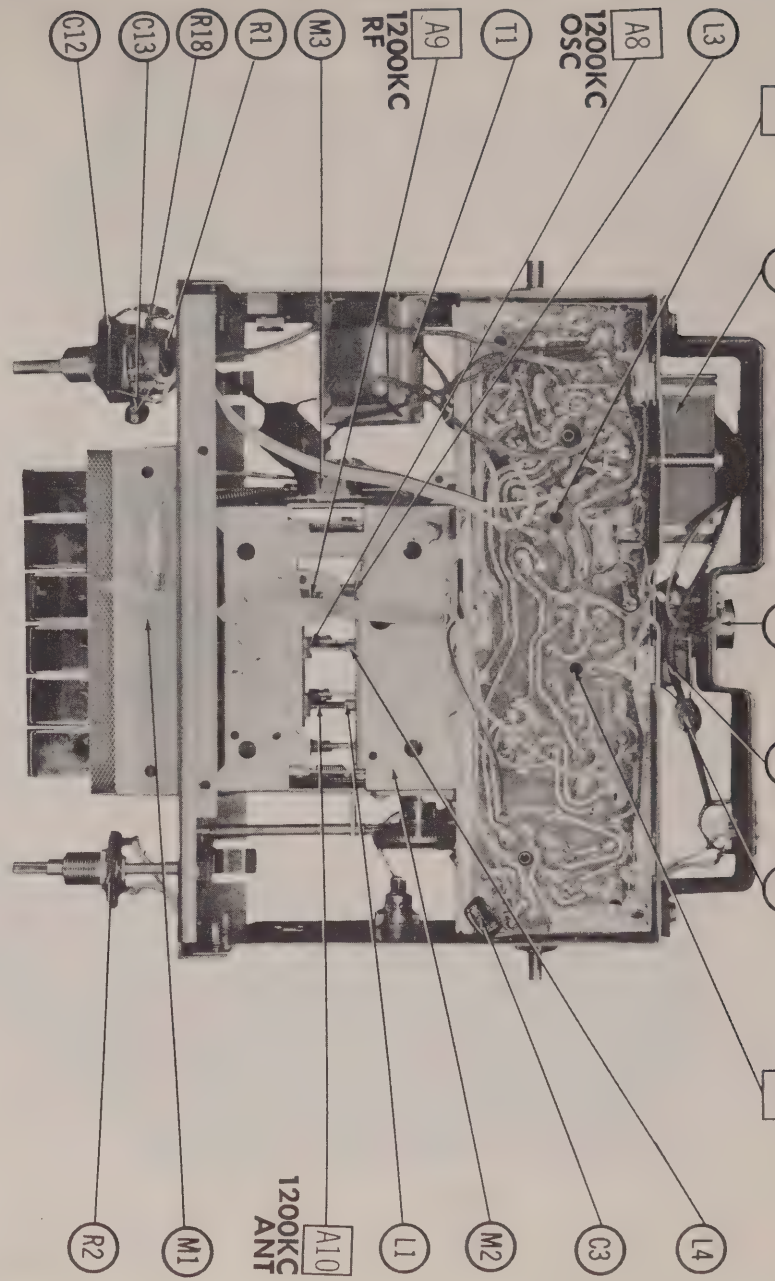
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

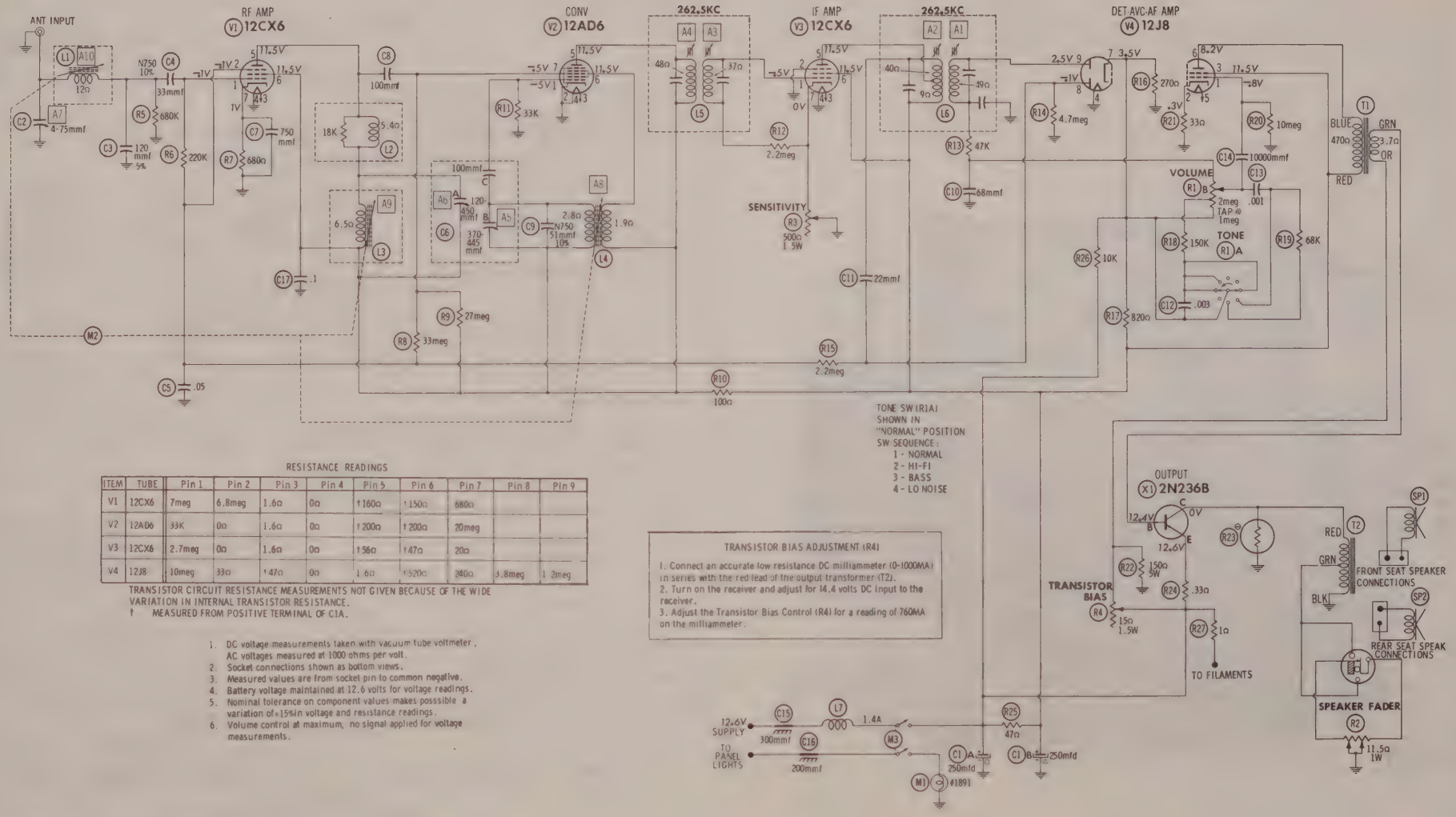
NAME	PART NO.	DESCRIPTION
Knob	2090685-1	Tuning, On-Off-Volume
Disc	2090007-1	Tone, Fader
Pushbutton	656085-1	"Off"
Pushbutton	656085-2	Station Selectors

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12CX6	7meg	6.8meg	1.6Ω	0Ω	†160Ω	†150Ω	680Ω		
V2	12AD6	33K	0Ω	1.6Ω	0Ω	†200Ω	†200Ω	20meg		
V3	12CX6	2.7meg	0Ω	1.6Ω	0Ω	†56Ω	†47Ω	20Ω		
V4	12J8	10meg	33Ω	†47Ω	0Ω	1.6Ω	†520Ω	240Ω	3.8meg	1.2meg

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
† MEASURED FROM POSITIVE TERMINAL OF C1A.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRANSISTOR BIAS ADJUSTMENT (R4)

1. Connect an accurate low resistance DC milliammeter (0-1000MA) in series with the red lead of the output transformer (T2).
2. Turn on the receiver and adjust for 14.4 volts DC input to the receiver.
3. Adjust the Transistor Bias Control (R4) for a reading of 760MA on the milliammeter.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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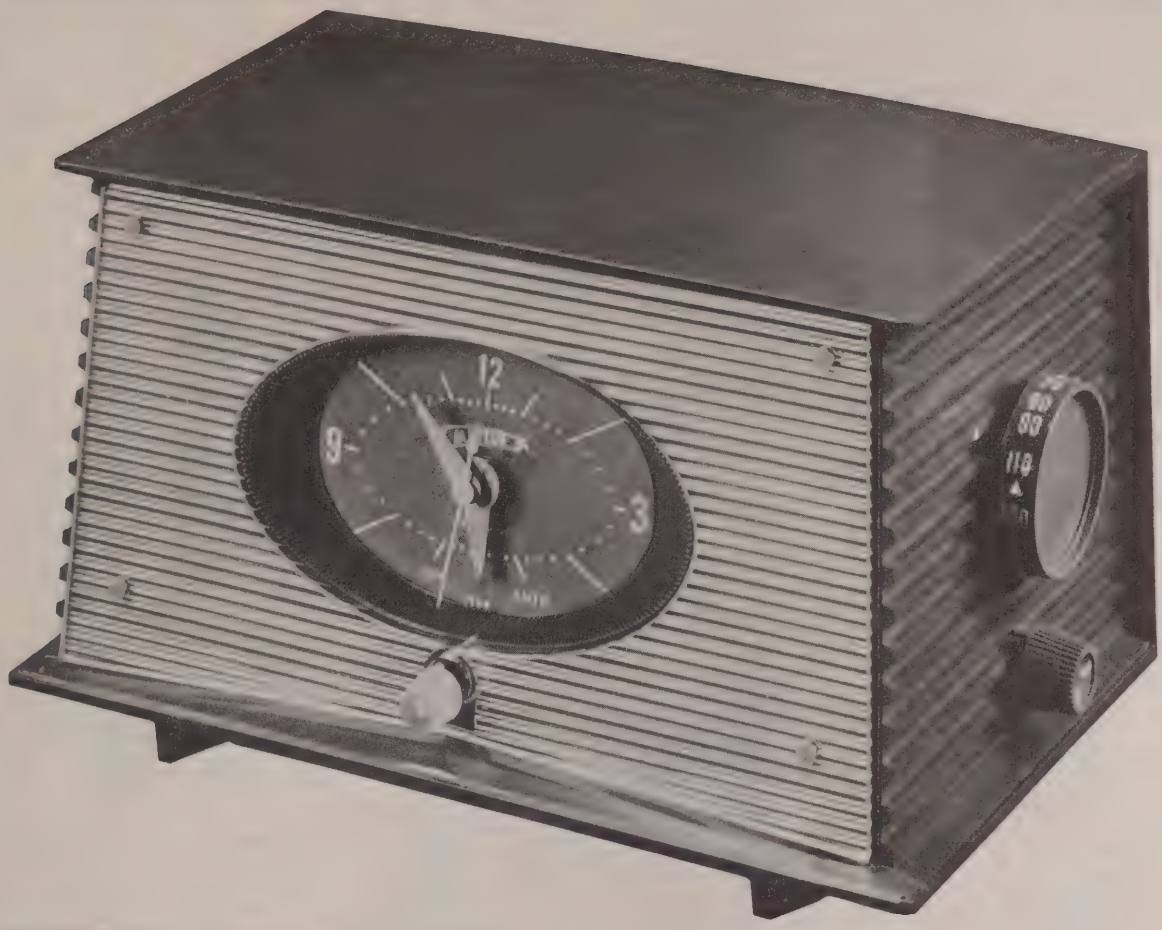
METEOR
MODEL 7016A (Ch. 528.53020)

METEOR
MODEL 7016A (Ch. 528.53020)



METEOR
MODEL 7016A (Ch. 528.53020)

TRADE NAME	Meteor Model 7016A (Ch. 528.53020)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC Operated AM Receiver With Electric Clock
TUBES (Four)	Types 12BE6 Converter, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles — RATING .3 Amp. @ 117 Volts AC (28 Watts)
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.	"	"	1620KC	"	"	A3	"
3.	"	"	600KC	600KC	"	A4	Adjust for maximum output. Repeat steps 2 and 3.
4.	50mmf	High side to junction of C2 and L1. Low side to chassis.	1400KC	1400KC	"	A5	Adjust for maximum output.

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H513

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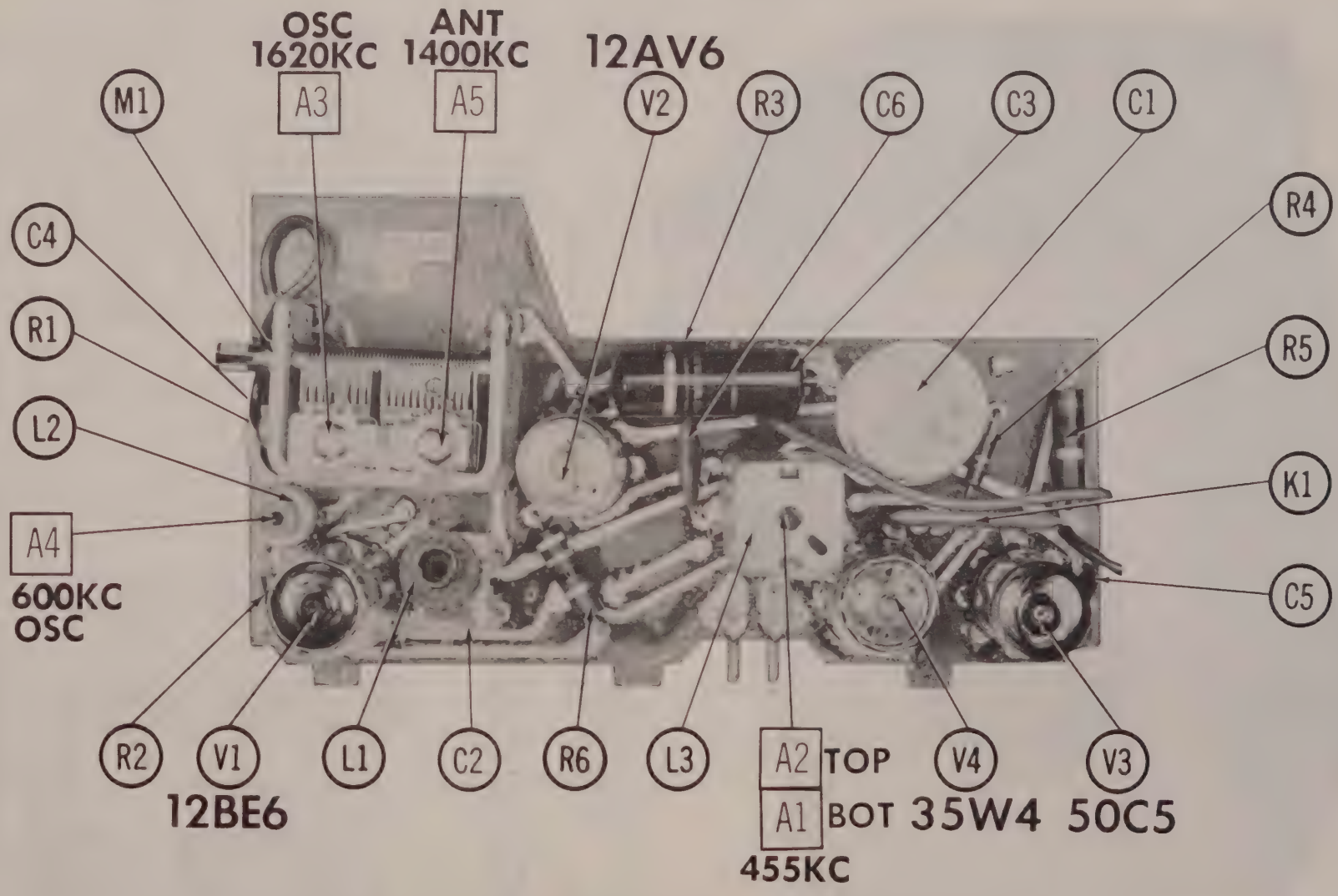


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	Det.-AVC-AF Amp.	12AV6	
V3	Output	50C5	
V4	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	METEOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■50	150	18-48-5	PRS150V25V 5030/20	BBRT5315C	PFP311.12	TDLT-15	FMT-327	R1404 *
B	▲30	150							
C	20	25							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	METEOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	1000	1500	20-94-0	DAC-2	DD16-102	HVB16D1	DC3021	20GA-D1	
C3	.047	200	16-47328	P288N-047	DF-503	CUB2S47	GEM-2147	2TM-S47	
C4	5000		15-50217	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C5	6000		15-60216						
C6	20000		15-20317	BPD-02	DD-203	BYB6S2		5HK-S2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	METEOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	24-263-0	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		METEOR PART No.	NOTES
	OHMS	WATT		
R2	22K		60-22301	
R3	2.2meg		60-22501	
R4	120Ω		60-12101	
R5	1000Ω	1	60-10211	
R6	47Ω	1	60-47011	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	METEOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1800Ω tap ⓐ 100Ω	3-4Ω	80-1-1							

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	METEOR PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	33-260-4	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		METEOR PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Trans.	10-22-0					Includes C2
L2	Osc. Coil	10-30-4					
L3	IF Trans.	10-66-2					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	METEOR PART No.	REPLACEMENT DATA	
K1	Audio Coup. Net.	5000mmf, 250mmf, 5000mmf, 220mmf, 10meg, 470K, 470K	13-14-3	Aerovox Centralab Sprague	PA-306 PC-159 DT-6

MISCELLANEOUS

ITEM No.	PART NAME	METEOR PART No.	NOTES
M1	Tuning Cap. Printed Board Clock Ass'y.	19-55-2 D25-11-1D 52-114	 Includes hands

CABINETS & CABINET PARTS

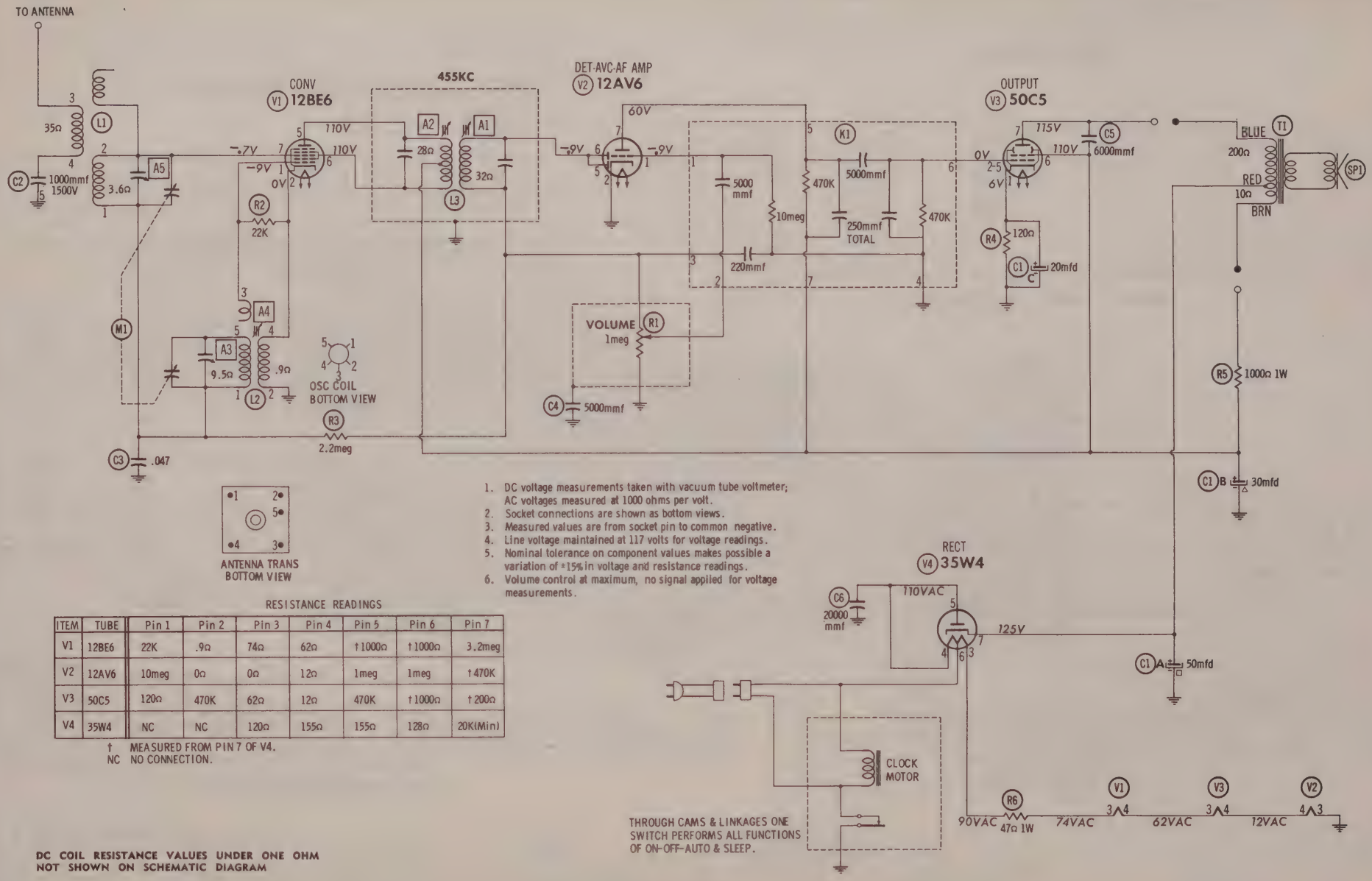
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-650-0	Clock Switch
Knob	52-786-0	Tuning
Knob	52-649-0	Volume
Cabinet	42-43-1	
Clock Hand	52-17-1	Alarm Set
Clock Hand	52-24-1	Second
Clock Hand	52-46-1	Hour
Clock Hand	52-47-1	Minute

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.9Ω	74Ω	62Ω	†1000Ω	†1000Ω	3.2meg
V2	12AV6	10meg	0Ω	0Ω	12Ω	1meg	1meg	†470K
V3	50C5	120Ω	470K	62Ω	12Ω	470K	†1000Ω	†200Ω
V4	35W4	NC	NC	120Ω	155Ω	155Ω	128Ω	20K(Min)

† MEASURED FROM PIN 7 OF V4.
NC NO CONNECTION.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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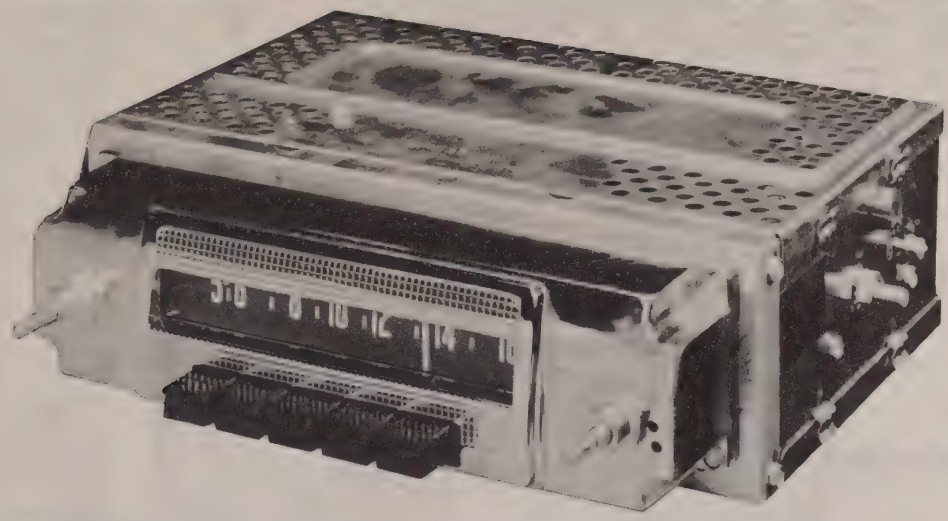
MOPAR
MODELS 852, 853

MOPAR
MODELS 852, 853



TRADE NAME	Mopar Models 852 (For 1958LD1, LD2, LD3 Dodge Automobiles); 853(For LS1, LS2, LS3 DeSoto Automobiles)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd, Chicago 51, Illinois
TYPE SET	Battery Operated Custom Built AM Automobile Receiver with Transistorized Output.
TUBES (Four)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12DL8 Det. -AVC-AF Amp.
POWER SUPPLY	12 Volt Storage Battery — RATING 1.4 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	535-1605KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Tone control to maximum treble.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6(V2) Low side to chassis.	262.5KC (400~ Mod.)	High frequency end stop.	Across Voice Coil.	A1, A2, A3, A4.	Adjust for maximum output.
2.	Fig. 1	Thru dummy to Ant. receptacle.	1610KC	"	"	A5, A6	"
3.	"	"	1400KC	Tune to 1400KC signal.	"	A7	"

Steps 4 & 5 are not necessary unless tuner has been tampered with or associated components have been replaced. If necessary remove escutcheon to expose tuning cores (A8, A9, A10). Back tuning cores 1 3/8" out of coils. Alignment tool Part #66A76278 may be used.

4.	Fig. 1	Thru dummy to Ant. receptacle.	1610KC	High frequency end stop.	Across Voice Coil.	A5, A6, A7	Adjust for maximum output.
5.	"	"	1020KC	Tuner carriage 49/64" from high frequency end stop.	"	A8, A9, A10	Adjust for maximum output. Repeat steps 4 & 5. Step 4 should be the last step. Cement cores.

With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.

POINTER ADJUSTMENT

With radio tuned to 1000KC, adjust pointer adjustment so that pointer coincides with 1000KC mark on dial.

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining buttons.

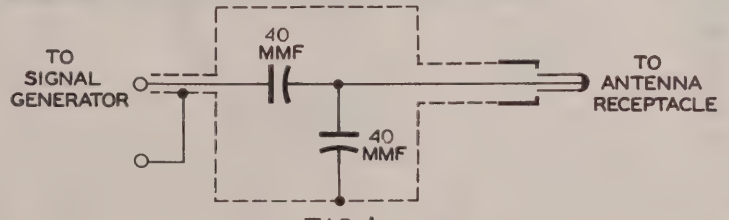


FIG. 1

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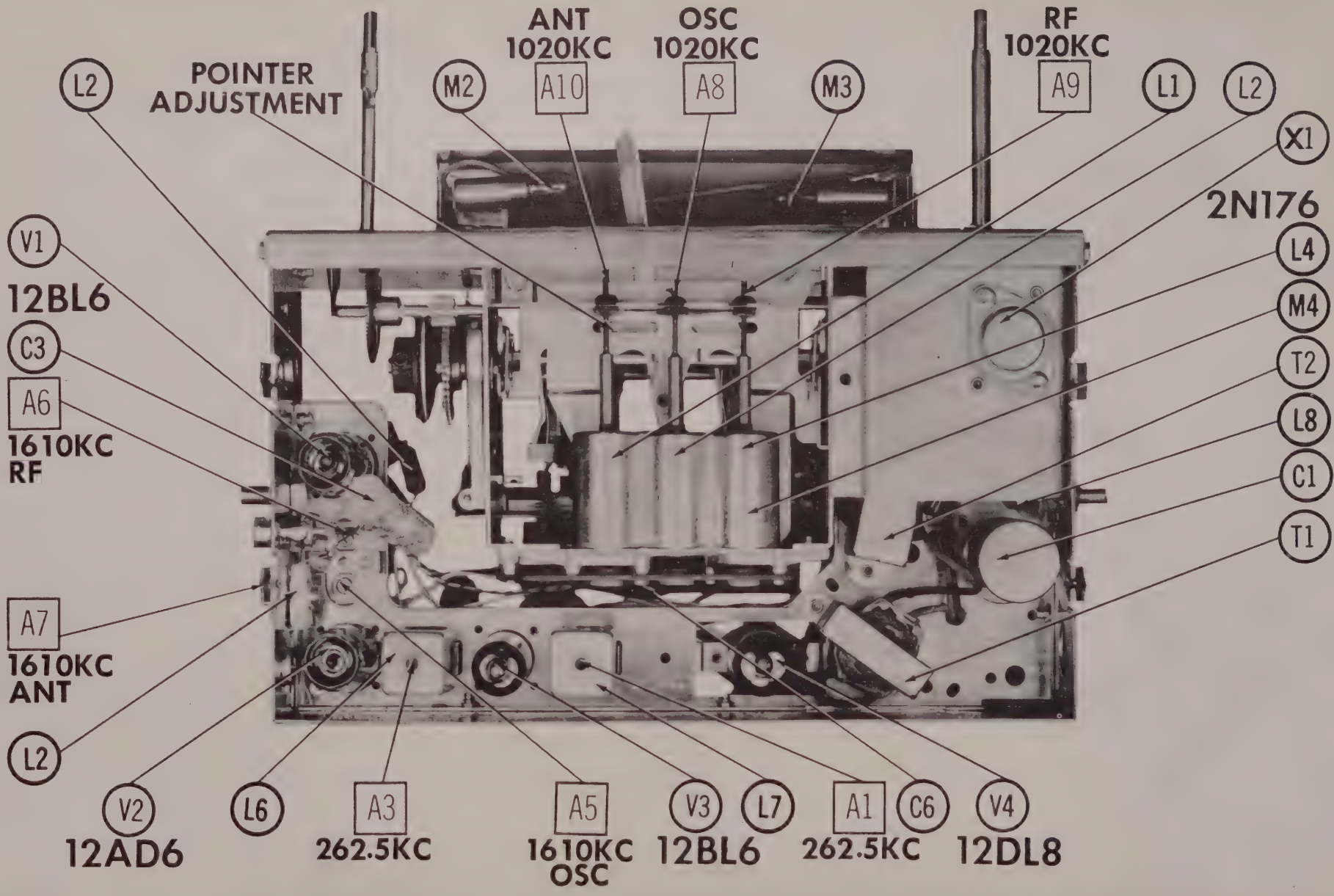
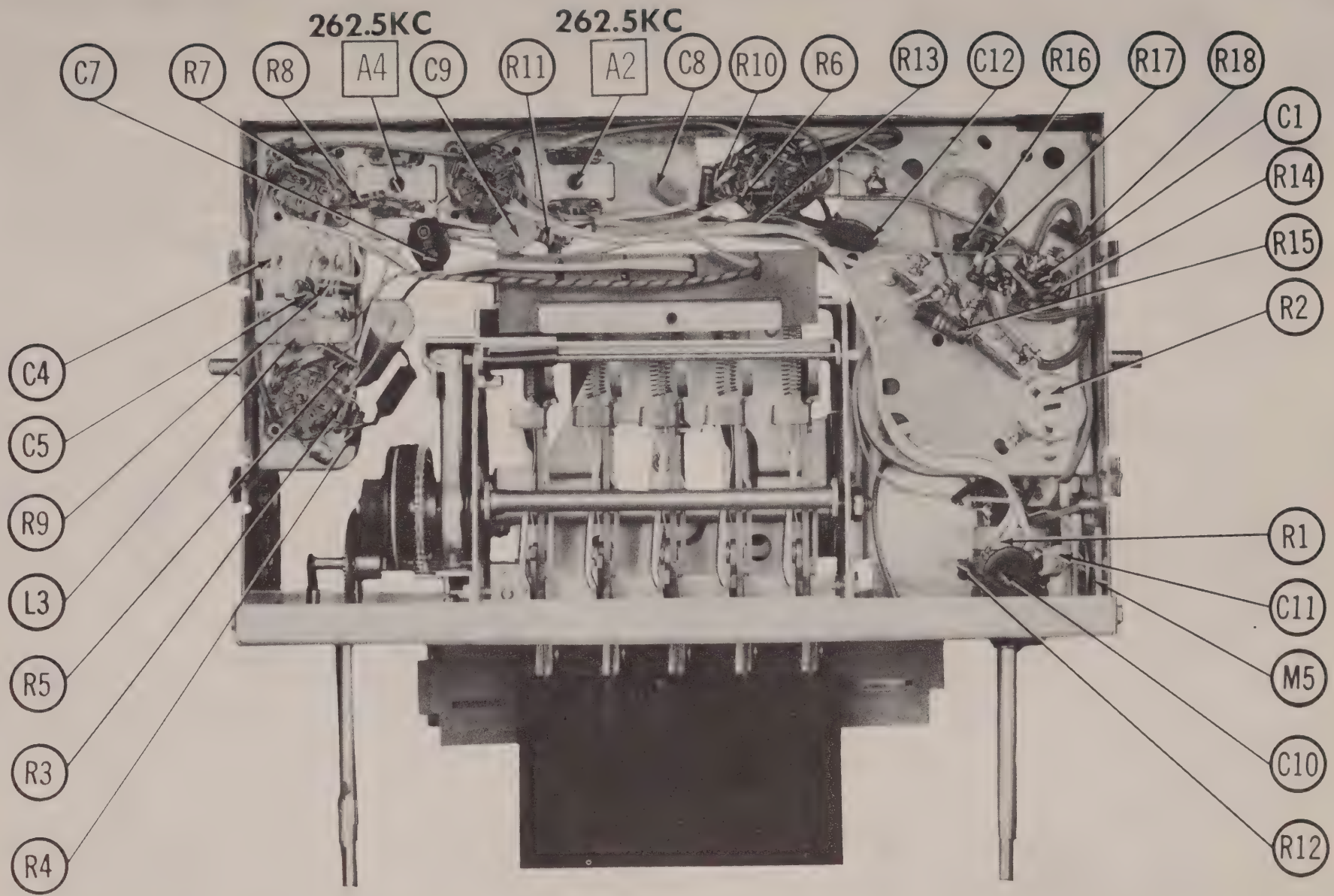


CHASSIS-TOP VIEW



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12BL6	
V4	Det. -AVC-AF Amp.	12DL8	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N176	Output	CBS-2N155	2N176		2N176	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■400	16	23B542329①	AFH3-00-90		WP300.5			R2634*
B	▲100	16							
C	100	16							

①In some versions of Model 853, C1A is 500mfd (C1 Part #23B560487)
* Non-Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	18-115		20K542026						Note 1.
C3	.1	200	8R121573	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C4A	50-260								
B	47		20K560255						
C	120-210								
C5	12		21R121462						N150 10% N220
C6	100		21R124032						
C7	10000		21R121946	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C8	100		21R400537	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C9	100		21R400537	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C10	3300		21R120422	BPD-0033	DD-332	BYA10D33	UC-5233	5GA-D33	
C11	1000		21R410127	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C12	10000		21R121946	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	

Note 1. Model 853 has 20-150mmf in this application (Part #20B532899)

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	18K560417		RTV-661C	♦ QJ-1093A	■ UE383IS	Tone Note 1.
B	1.3meg	½						Volume, Tap ⓐ 650K
C	Switch							
R2	210Ω	1.5 (WW)	18K540718		39-200			Transistor Bias Adj.

Note 1. Part #18B560416 used in Model 853
■ "STA-LOC" equivalent: FB46L, OS2375, RU16T654, IS2875, US42
♦ CONCENTRIKIT equivalent; K-6 kit, B11-141, P13-214 (Panel)
B19-137X, R1-226 (Rear)
76-2 switch

RESISTORS

All wattages 1/2 watt, or less. unless otherwise listed.

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R3	3.3meg		6K119407	
R4	1000Ω		6R6301	
R5	22meg		6R118247	
R6	1.5meg		6R3966	
R7	1.5meg		6R3966	
R8	3.3meg		6K119407	
R9	33K		6K121704	
R10	12meg		6R400334	

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R11	47K		6K121687	
R12	47K		6K121687	
R13	10meg		6K119408	
R14	33Ω		6K121304	
R15	5.6Ω	(WW)	17K739323	
R16	.47Ω	(WW)	17K488266	
R17	10Ω Cold		6K540634	
R18	100Ω		6K119402	Note 1.

Note 1. In Model 853, 390Ω is used in this application (Part#6K122312)

TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6.4	:1	25K542376							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	33.5Ω Tap ③ 3-4Ω	25C542105							
	TURNS RATIO								
	2.7 :1								

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5½" x 7½"	PM	3-4Ω	50K560421		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	24C536308					Note 1.
L2	RF Choke	24K539955					Incls. 27mmf cap
L3	IF Trap Coil	24K539616	19-3125	TV-195			133 microhenries
L4	RF Coil	24C536308					Note 1.
L5	Osc. Coil	24B536300					Note 1.
L6	Input IF	24K560418	16-6752	BC-350	12-H1	RF-3	
L7	Output IF	24B542371					

Note 1. Part of M4

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L8	1.4A@12.6 VDC	.2Ω	.004HY	25K560752①						

①Tapped choke used in some versions of Model 853 (Part#25C561000)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	7AG	7½A 32V	65R122346	9K540494	30707.5 (7½A 32V)	155009	SFE7½	HDH

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Lamp	65R10867	#44
M3	Lamp	65R10867	#44 (22Ω resistor used in Model 853)
M4	Tuner	77E560181	AT-225, Complete, Model 852
	Tuner	77E560182	AT-226, Complete, Model 853
M5	Spark Plate	48K539953	Selenium Type (Use #43A539954 Bushing, #5K124848 Eyelet, #4A542137 Cup Washer for Mounting)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

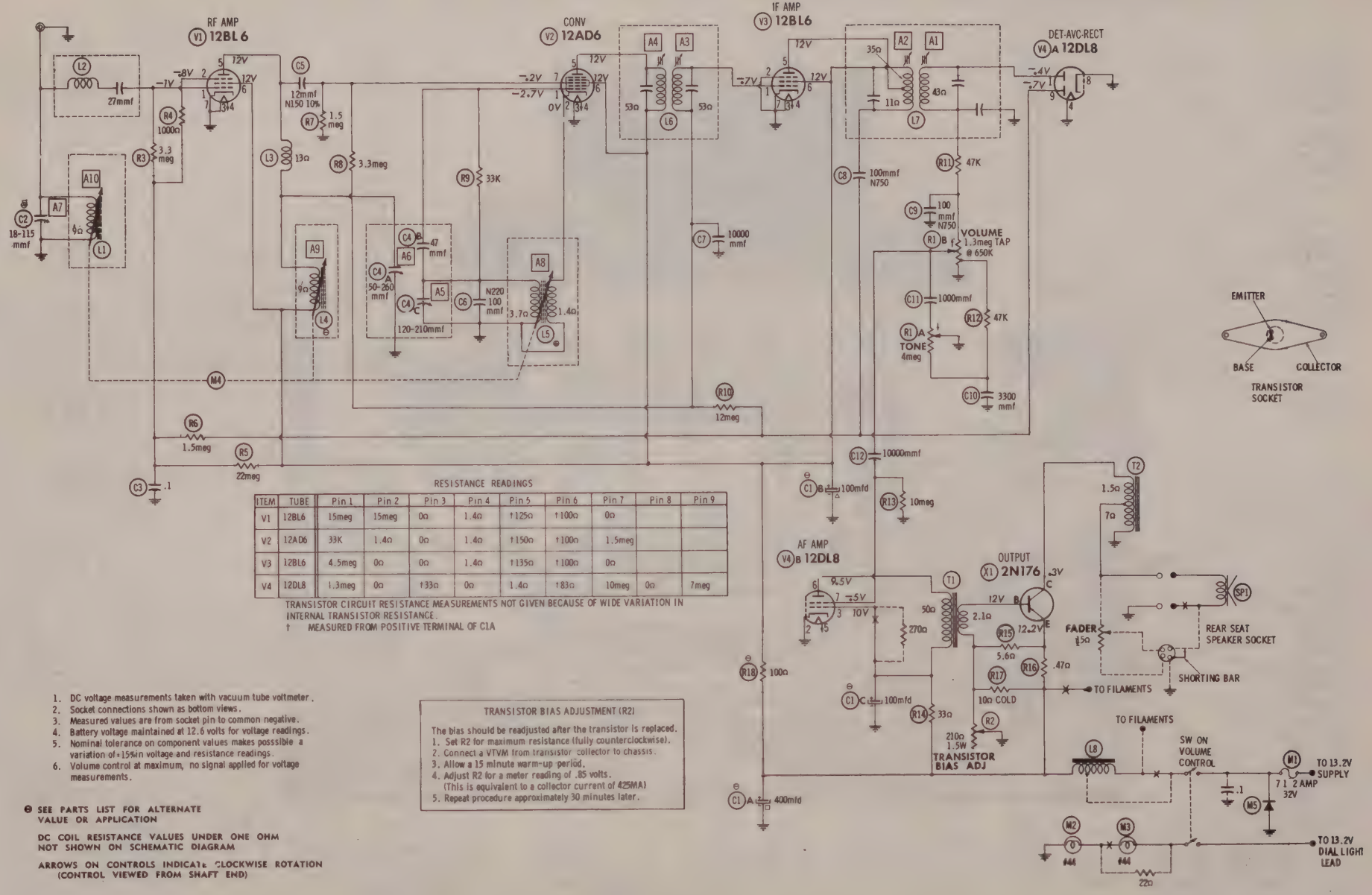
NAME	PART NO.	DESCRIPTION
Knob	1V540260	Volume and Tuning, Model 852
Knob	1V540099	Volume and Tuning, Model 853
Knob	36B539078	Two Used, Tone and Dummy, Model 852
Knob	36C539088	Two Used, Tone and Rear Seat Speaker, Model 853
Pushbutton	38B539914	Five Used, Model 852
Pushbutton	1B540078	Five Used, Model 853
Pointer	1A539631	Incl. Stud Ass'y., Model 852
Pointer	1A539632	Incl. Stud Ass'y., Model 853
Dial Scale	34C539581	Model 852
Dial Scale	34K539545	Model 853
Dial Crystal	61B539949	Model 852

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Shielded Hook-up Wire ..... Use BELDEN No. 8885

Bonding Strap ..... Use BELDEN No. 8661



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	15meg	15meg	0Ω	1.4Ω	†125Ω	†100Ω	0Ω		
V2	12AD6	33K	1.4Ω	0Ω	1.4Ω	†150Ω	†100Ω	1.5meg		
V3	12BL6	4.5meg	0Ω	0Ω	1.4Ω	†135Ω	†100Ω	0Ω		
V4	12DL8	1.3meg	0Ω	†33Ω	0Ω	1.4Ω	†83Ω	10meg	0Ω	7meg

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
† MEASURED FROM POSITIVE TERMINAL OF C1A

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

TRANSISTOR BIAS ADJUSTMENT (R2)

The bias should be readjusted after the transistor is replaced.
1. Set R2 for maximum resistance (fully counterclockwise).
2. Connect a VTVM from transistor collector to chassis.
3. Allow a 15 minute warm-up period.
4. Adjust R2 for a meter reading of .85 volts. (This is equivalent to a collector current of 425MA)
5. Repeat procedure approximately 30 minutes later.

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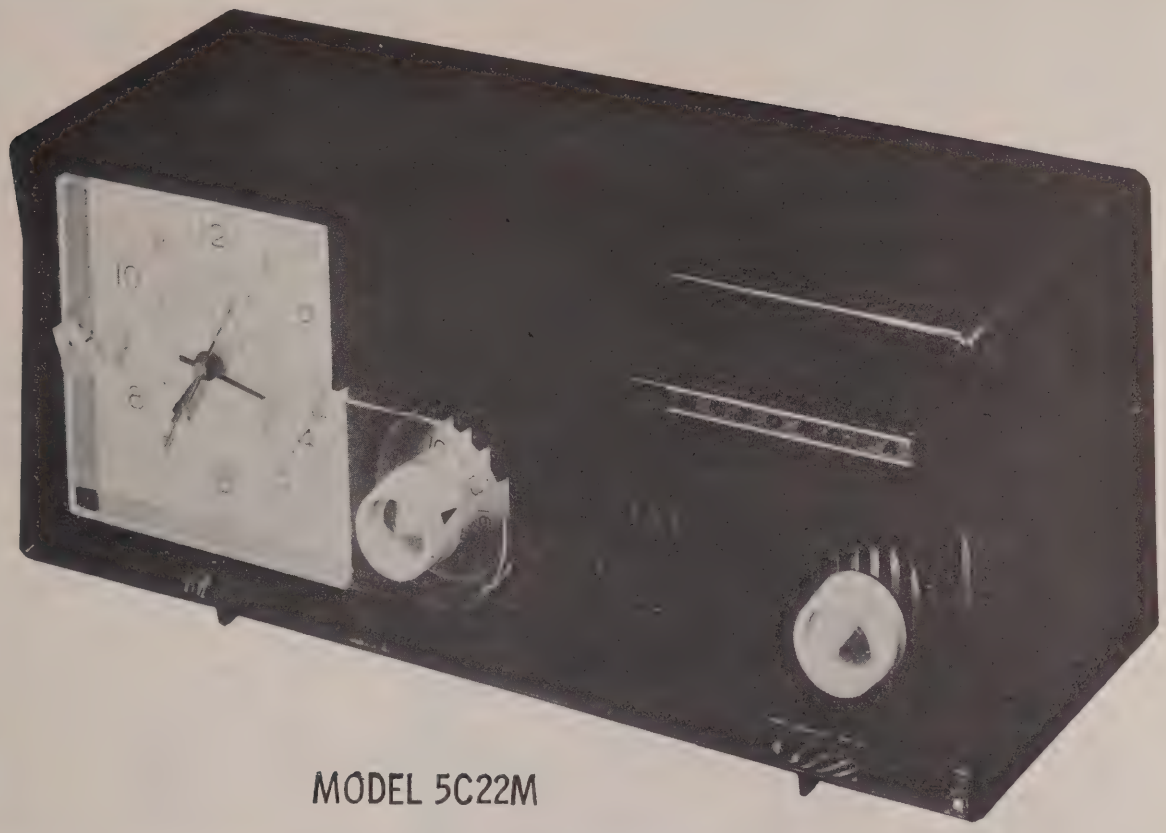
MOTOROLA MODELS 5C22M, N, P, W, Y, 5C23CW, GW, PW (Ch. HS-578, HS-579)

MOTOROLA MODELS
5C22M, N, P, W, Y, 5C23CW, GW,
PW (Ch. HS-578, HS-579)



MODEL 5C22M

MOTOROLA MODELS
5C22M, N, P, W, Y, 5C23CW, GW,
PW (Ch. HS-578, HS-579)

TRADE NAME	Motorola Models 5C22M, N, P, W, Y (Ch. HS-578); 5C23CW, GW, PW (Ch. HS-579)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd, Chicago 51, Illinois
TYPE SET	AC Operated AM Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 34W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .26 Amp. @ 117 Volts AC (26 Watts Less Clock)
TUNING RANGE—BROADCAST	532KC-1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B—. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 12BE6 (V1) Low side to B—.	455KC (400~ Mod.)	Tuning gang fully open.	Across Voice Coil	A1, A2, A3, A4,	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	600KC	Tune to 600KC signal.	"	A6	Chassis HS-578 Only. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1400KC	Tune to 1400KC signal.	"	A7	Chassis HS-579 Only. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat Steps 2, 3, and 4.

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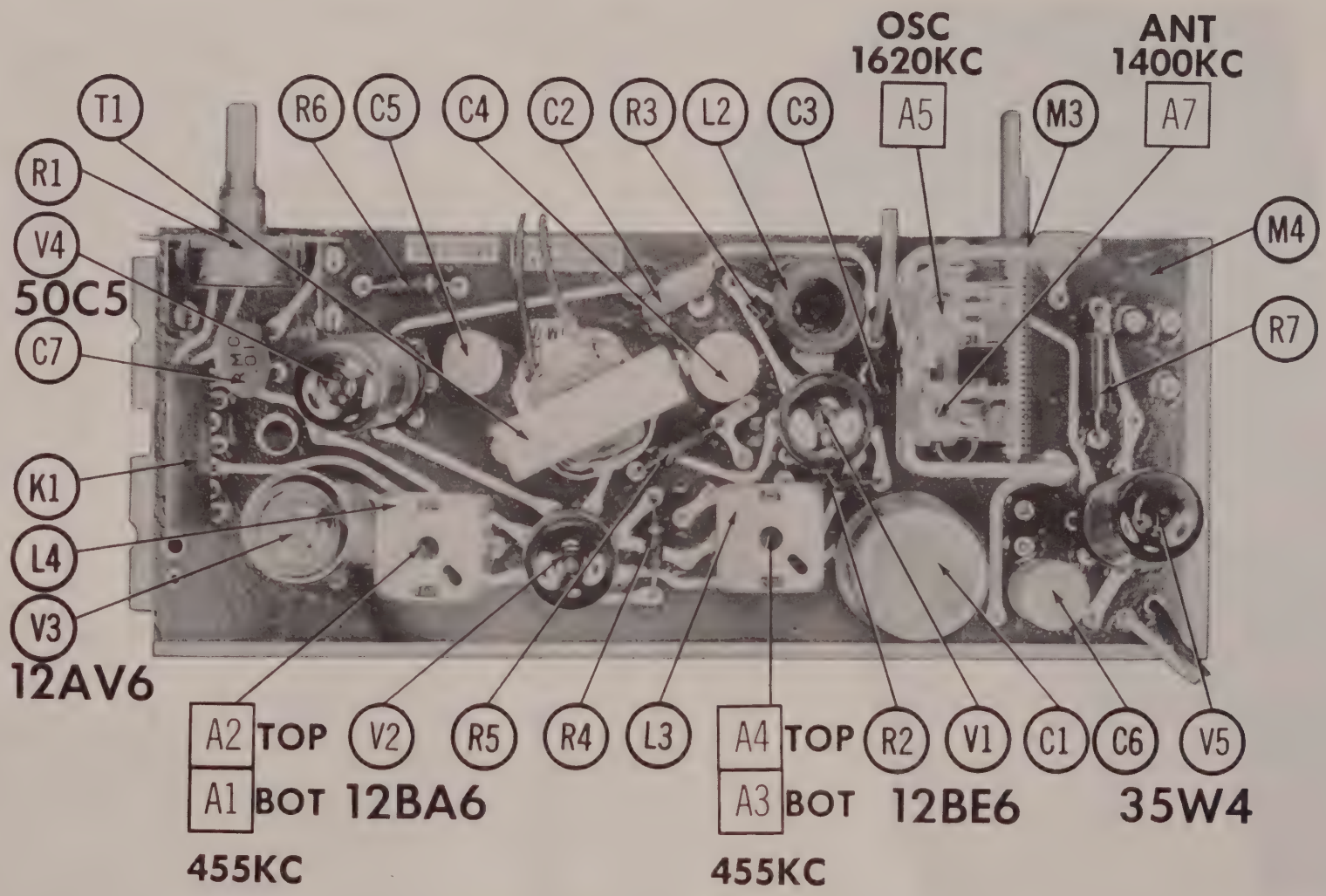
SET 410 FOLDER 11



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Motorola PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■ 50	150	23B632015	AFH2-15-05	BBRD5315	PFP213.1	TDLD-8	MTD-301	R2230*
B	▲ 30	150							

* Non Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Motorola PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000		21B533471	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C3	100		21R410036	N750-D1100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C4	.05	400	8K121268	P488N-05		BC6S47U	ACE615	4SE-S47	
C5	.03	400	8K122983	P488N-03					
C6	.05	400	8K121268	P488N-05		BC6S47J	ACE615	4SE-S47	
C7	10000		21B533471	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Motorola PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg	½	18K638017					Volume①

① Part # 18B637860 used in Chassis HS-579

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Motorola PART No.	NOTES
	OHMS	WATT		
R2	1meg		6R6004	
R3	22K		6R6028	
R4	100Ω		6R6018	

ITEM No.	RATING		Motorola PART No.	NOTES
	OHMS	WATT		
R5	3.3meg		6R2118	
R6	150Ω		6R3992	
R7	1500Ω	1	6K125835	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Motorola PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2900Ω	3-4Ω	25K638007	Z1101 ①	A-3025①	AU-605①	A-3332 ①	24S53 ①	S-12X ①	① Use original channel frame.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Motorola PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	50K638023	4A07	Used in 5C22 Series
	4"	PM		50C637838		Used in 5C23 Series

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Motorola PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	1V638126					5C22 Series①
	Loop Stick	24K638190					5C23 Series
L2	Osc. Coil	24K636206					
L3	Input IF	24K636016	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	24K636017	16-6780	BC-357	13-PC10	RF-4	

①Includes cabinet back, line cord & appliance output.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Motorola PART No.	REPLACEMENT DATA	
K1	Audio Coup Net.	5000mmf, 250mmf 220mmf, 5000mmf 470K, 470K, 6.8meg	51B635833	Aerovox Centralab Sprague	PA-512 PC-158 DT-5

MISCELLANEOUS

ITEM No.	PART NAME	Motorola PART No.	NOTES
M1	Tuning Cap.	19K638018	2 Gang, Chassis HS-578 (Ant. 21-215mmf)
	Tuning Cap.	19B637861	2 Gang, Chassis HS-579
M2	Clock Ass'y	72D638025	5C22 Series
	Clock Ass'y.	72D637832	5C23 Series
	Crystal	61C637946	Clock, 5C22 Series
	Crystal	61B637834	Clock, 5C23 Series
	Printed Circuit Panel	84B639412	Printed Board, Less all Components. (Add letter suffix)

CABINETS & CABINET PARTS

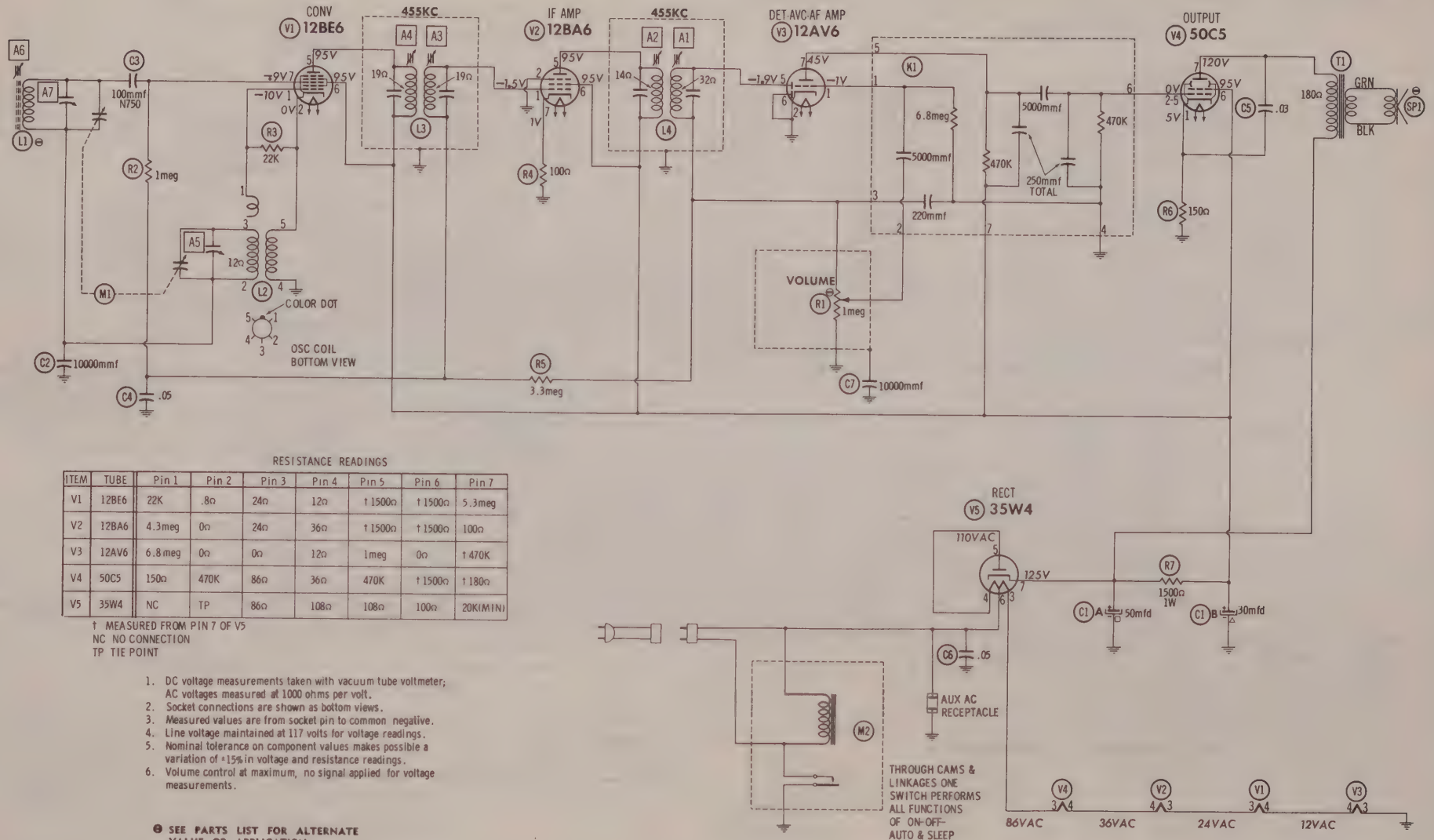
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	64A638024	Background, 5C22 Series
Knob	36C635812	Clock, Clear; 5C22 Series.
Knob	36B637835	Clock, Clear; 5C23 Series
Knob	36B637948	Tuning, Antique White; 5C22 Series
Knob	36C637895	Tuning, Antique White; 5C23 Series
Knob	36K637949	Volume, Antique White; 5C22 Series
Knob	36B637898	Volume, Antique White; 5C23 Series
Cabinet	1V639722	Mahogany, Model 5C22M
Cabinet	1V638151	Mocha, Model 5C22N
Cabinet	1V638152	Pink, Model 5C22P
Cabinet	1V638153	Antique White, Model 5C22W
Cabinet	1V638154	Yellow, Model 5C22Y
Cabinet Back	1V639568	White, 5C23 Series
Cabinet Front	1V638187	Blue, Model 5C23CW
Cabinet Front	1V638188	Green, Model 5C23GW
Cabinet Front	1V638189	Pink, Model 5C23PW

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.8Ω	24Ω	12Ω	†1500Ω	†1500Ω	5.3meg
V2	12BA6	4.3meg	0Ω	24Ω	36Ω	†1500Ω	†1500Ω	100Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	1meg	0Ω	†470K
V4	50C5	150Ω	470K	86Ω	36Ω	470K	†1500Ω	†180Ω
V5	35W4	NC	TP	86Ω	108Ω	108Ω	100Ω	20K(MIN)

† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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Howard W. Sams & Co., Inc. 1958

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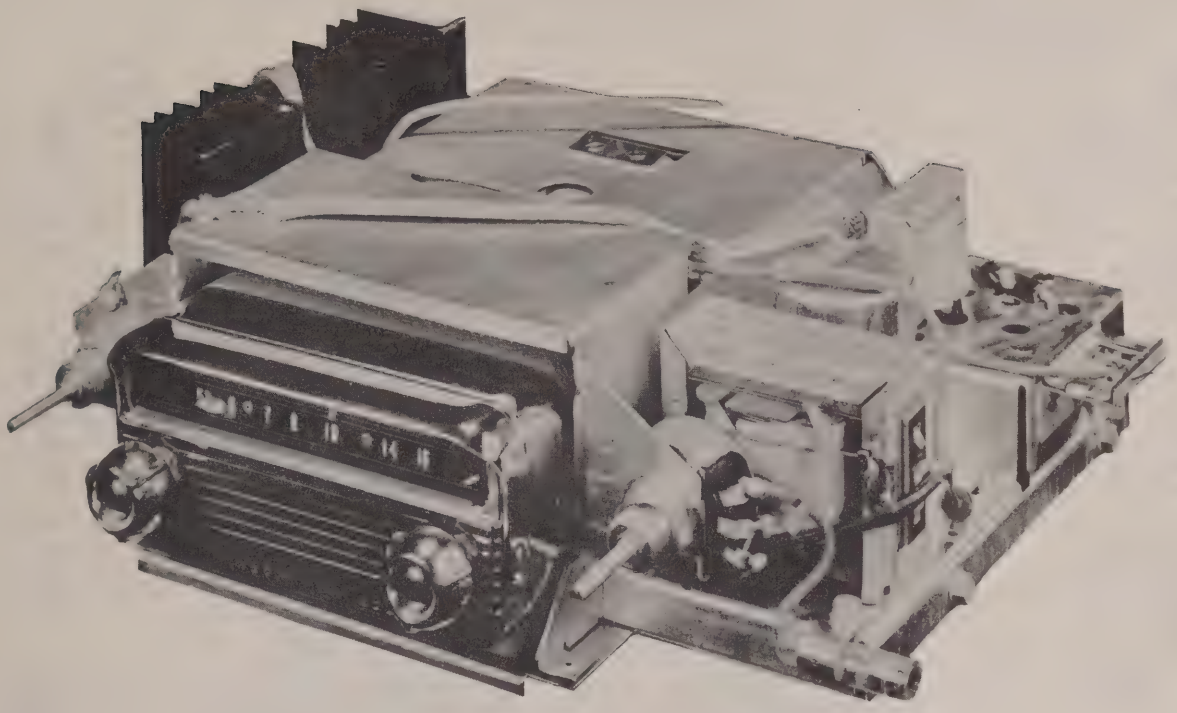
OLDSMOBILE MODEL 989131

OLDSMOBILE MODEL 989131



OLDSMOBILE MODEL 989131

TRADE NAME	Oldsmobile Model 989131 (For 1958 Oldsmobile Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated Custom Built AM Transistorized Automobile Or Portable Receiver
POWER SUPPLY	12 Volt Storage Battery (or) 6 Volts DC Self Contained Battery
RATING	1.2 Amp. @ 12.6 Volts DC (or) 6.2MA @ 6 Volts DC (Portable)
TUNING RANGE—BROADCAST	550 - 1600KC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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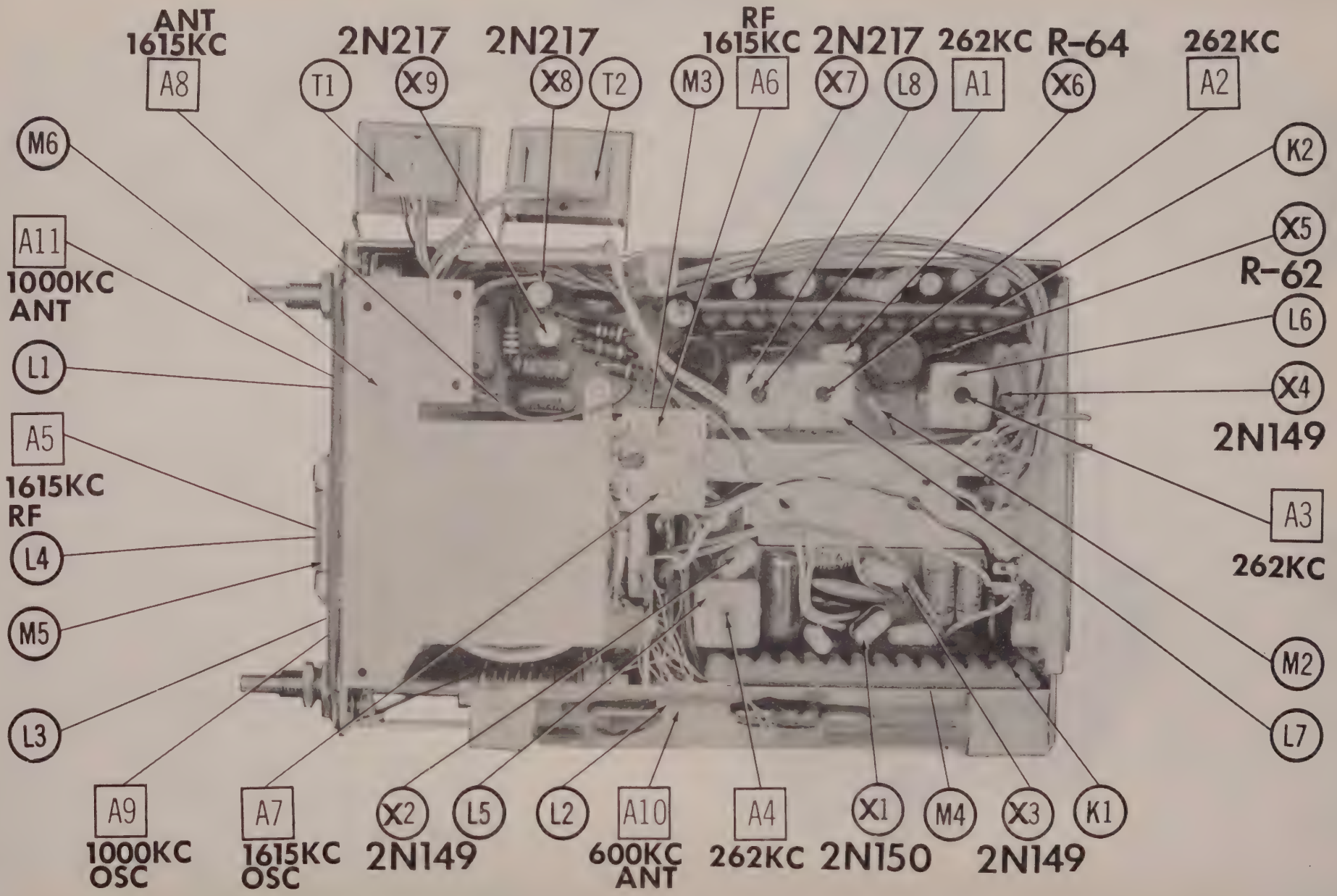


CHASSIS PORTABLE UNIT - ALIGNMENT, INDUCTOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

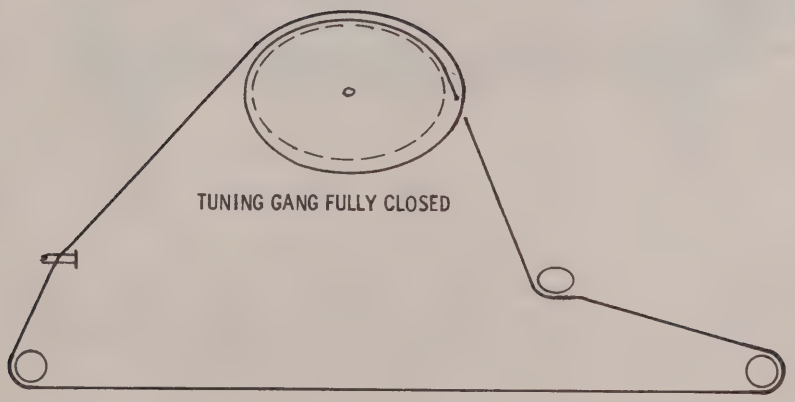
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
ORIGINAL IF transformer cores (A1, A2, A3, A4) are cemented and need not be adjusted.

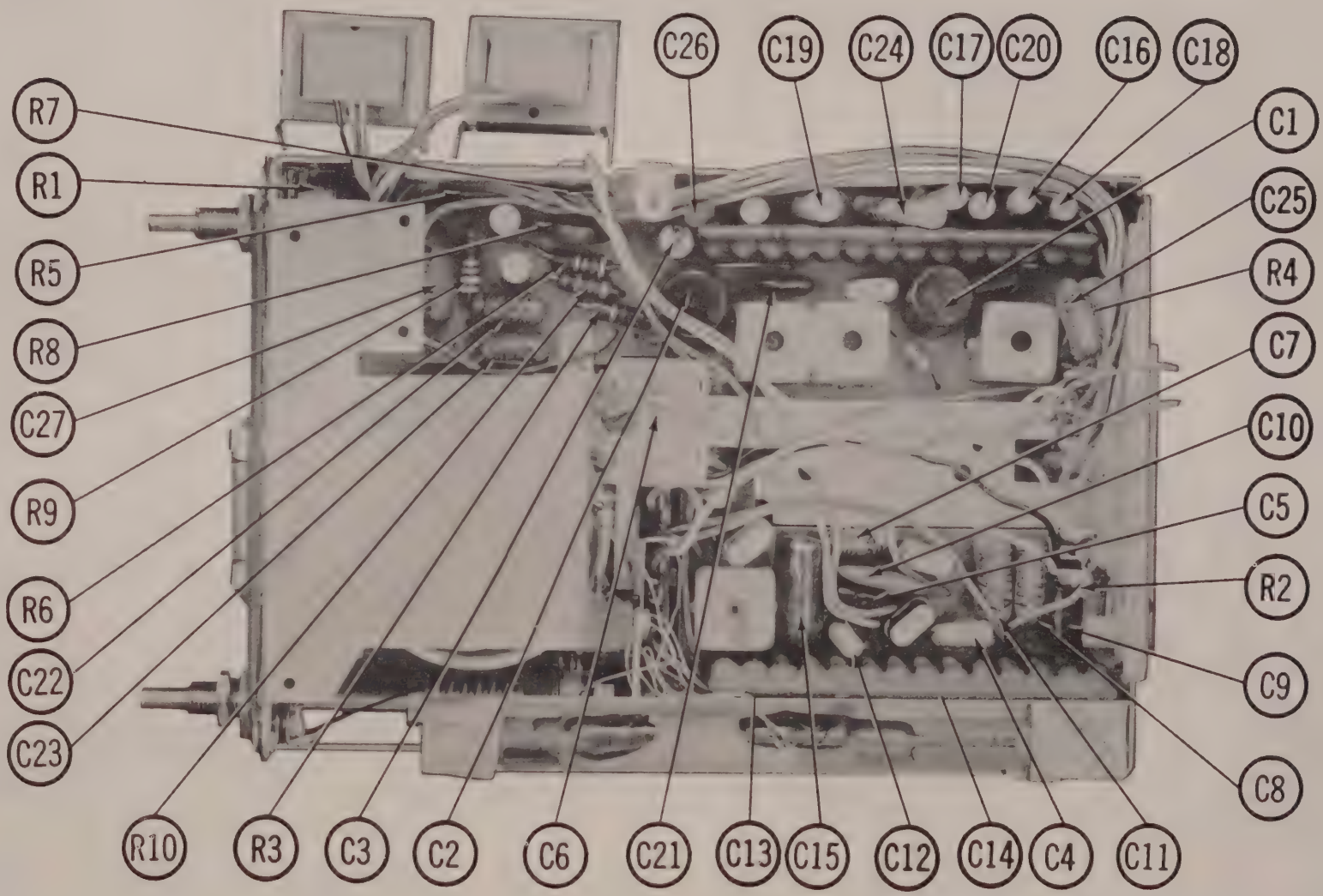
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	. . lmfd	High side to base of 2N149 (X2 Mixer). Low side to chassis.	262KC (400% Mod)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
	Check setting of tuning cores A5, A9, A11. Rear of cores should be 1 11/32" from back of coil forms.						
2.		Loop	1615KC	High frequency end stop	Across voice coil	A6, A7, A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1000KC	Tune to 1000KC signal	"	A9	"
4.		"	1615KC	High frequency end stop	"	A7	"
5.		"	600KC	Tune to 600KC signal	"	A10	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output by changing coil position on core.
6.		"	1400KC	Tune to 1400KC signal	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
	Step 7 is not necessary unless antenna coil or core is replaced. If necessary, install portable unit in rack and remove covers from both rack and portable unit.						
7.	68mmf	High side to antenna receptacle. Low side to chassis.	1000KC	Tune to 1000KC signal	Across voice coil	A11	Adjust for maximum output.
	With radio installed in car and antenna fully extended, tune in a weak station between 600KC and 1000KC. Adjust A12 for maximum output.						

POINTER ADJUSTMENT

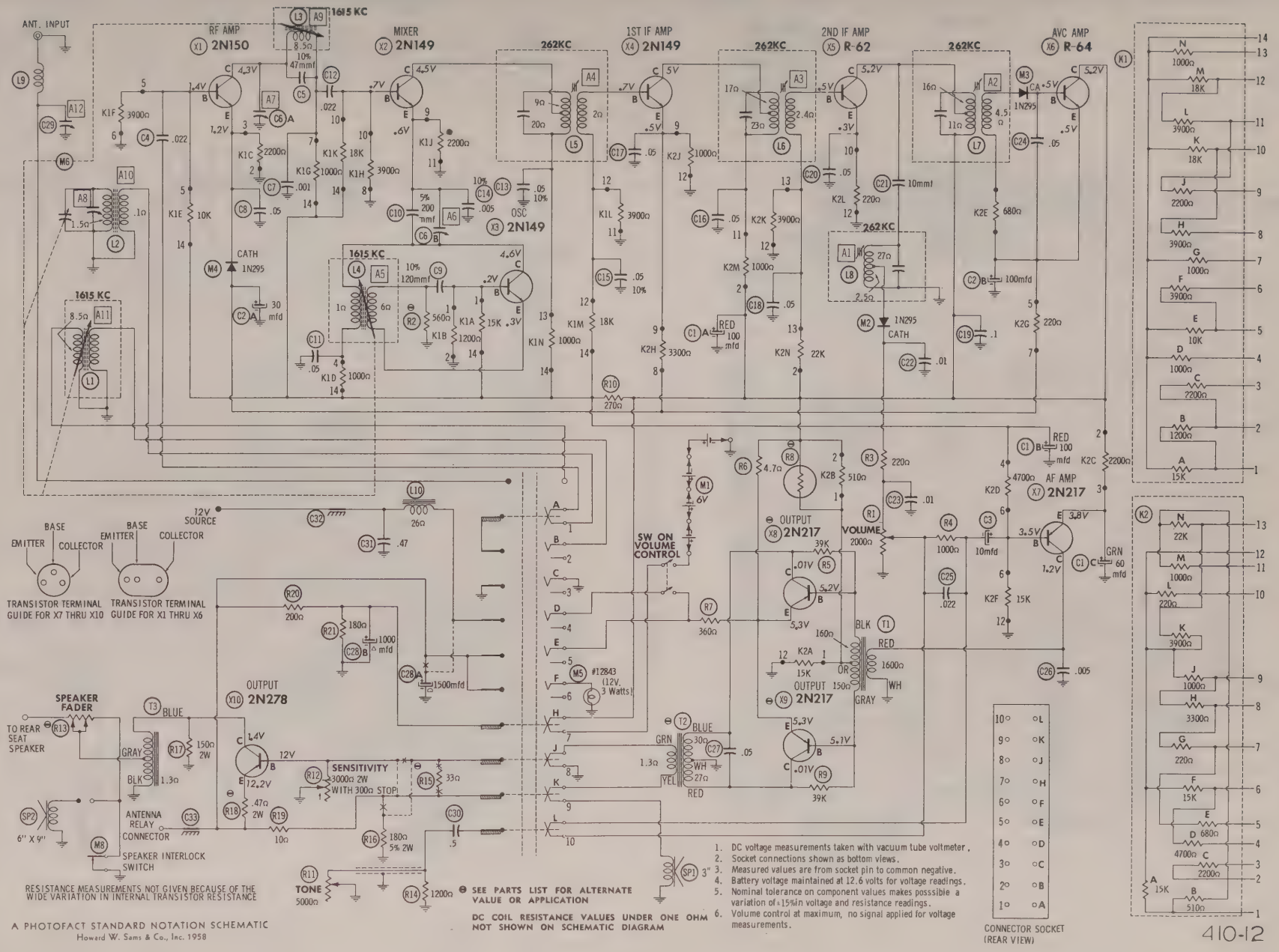
With radio tuned to an 1100KC signal, adjust pointer to coincide with 11 on dial.



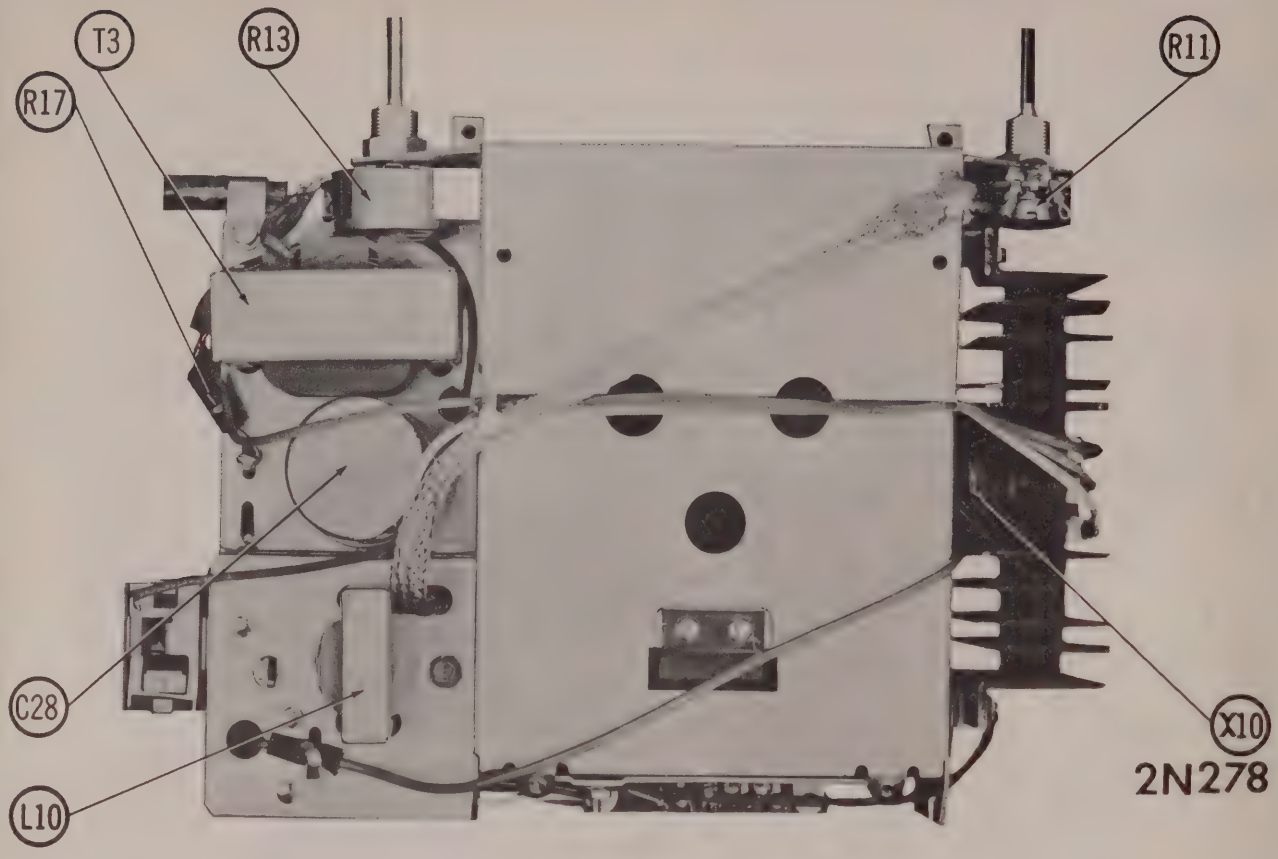
DIAL CORD STRINGING



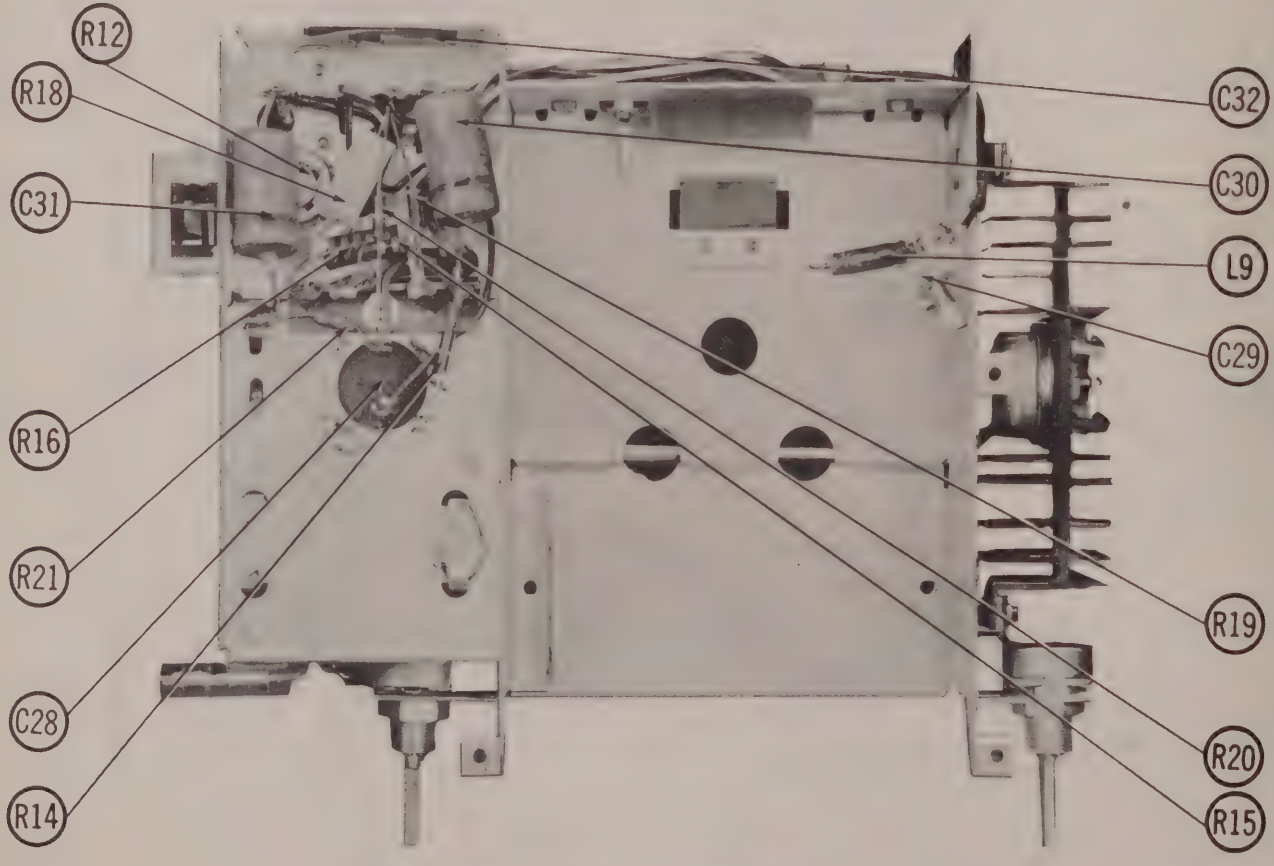
CHASSIS PORTABLE UNIT - CAPACITOR & RESISTOR IDENT.



OLDSMOBILE MODEL 9891311



CHASSIS RACK-TOP VIEW



CHASSIS RACK - BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N150	RF Amplifier					
X2	2N149	Mixer					
X3	2N149	Oscillator					
X4	2N149	1st IF Amplifier					
X5	R-62	2nd IF Amplifier					
X6	R-64	AGC Amplifier					
X7	2N217	Driver					
X8	2N217	Output					Used as Driver when radio is in car
X9	2N217	Output					Used as Driver when radio is in car

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	100	8	7271256						R2671 *
B	100	8							
C	60	8							
C2A	30	6	7271257						R2672 *
B	100	6							
C3	10	8	7271255			TT12X10			TE-1114

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.022	50	7271301						
C5	47		6367						10%
C6A			7270793						
B									
C7	.001	50	6627						
C8	.05	50	7270974						
C9	120		6372						10%
C10	200		7271299		TCZ-200	5R5T2		MS-32	5%
C11	.05	50	7270974						
C12	.022	50	7271301						
C13	.05	50	7270974						10%
C14	.005	50	6631						10%
C15	.05	50	7270974						10%
C16	.05	50	7270974						
C17	.05	50	7270974						
C18	.05	50	7270974						
C19	.1	50	7271302						
C20	.05	50	7270974						
C21	10		1215549						5%
C22	.01	50	7270975						
C23	.01	50	7270975						
C24	.05	50	7270974						
C25	.022	50	7271905						
C26	.005	50	6631						
C27	.05	50	7270974						

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2000Ω	½	7270665					Volume & Switch

PARTS LIST & DESCRIPTION (continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R2	560Ω			Note 1
R3	220Ω		1117	
R4	1000Ω		1125	
R5	39K		1218	
R6	4.7Ω		7269775	

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R7	360Ω		1213225	
R8			7270782	Note 2
R9	39K		1218	
R10	270Ω		1118	

Note 1. Some versions may use 1200Ω in this application (Part #1126).
Note 2. Temperature compensating unit.

TRANSFORMER (DRIVER)

ITEM No.	Turns Ratio		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.2	:1	7270811							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	400Ω CT	12Ω	7270804 ①	GH4 ②						① Used as driver when radio is in car. ② Use original channel frame.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	3"	PM	12Ω	7270796		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Trans.	7270960					
L2	Loop Stick	7270777					
L3	RF Coil	7270789					
L4	Osc. Coil	7270756					
L5	1st IF	7270814					
L6	2nd IF	7270815					
L7	3rd IF	7270817					
L8	4th IF	7270816					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	DELCO PART No.	REPLACEMENT DATA
K1	Resistor Pack	15K, 1200Ω, 2200Ω, 1000Ω, 10K, 3900Ω, 1000Ω, 3900Ω, 2200Ω, 18K, 3900Ω, 18K, 1000Ω	7271310	
K2	Resistor Pack	15K, 510Ω, 2200Ω, 4700Ω, 680Ω, 15K, 220Ω, 3300Ω, 1000Ω, 3900Ω, 220Ω, 1000Ω, 22K	7271309	

BATTERIES

ITEM No.	VOLTAGE	DELCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	6V			Z		915		M-15R	Four required.

PORTABLE
PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		DELCO PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N295	7269746	1N60	1N60	2nd Det. (Pigtail)
M3	1N295	7269746	1N60	1N60	AVC Rect. (Pigtail)
M4	1N295	7269746	1N60	1N60	Overload Limiter (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M5	Lamp	7270646	Holland, Philips, #12843, 12V. 3 Watts
M6	Tuning Cap.	7270662	Ant. 25—277mmf
	IF Printed Board	7270962	
	RF Printed Board	7270963	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

RACK
PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X10	2N278	Output					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C28A	▬1500	16	7270954	AFH2-75-50		WP200. 25			R2670 *
B	▲1000	10							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C29			7270909						
C30	. 5	100	7270955	P288N-5			GEM-205	2TM-P5	
C31	. 47	100	5692	P288N-47			GEM-2047	2TM-P47	
C32			7270901						

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R11A	5000Ω	½	7270904	AB-11 †				Tone
B	Shaft			AK-8				
R12	3000Ω	2(WW)	7269743					Sensitivity, Stop ② 300Ω
R13		2(WW)	7270906 ①					Speaker Fader Note 1

† Use AK-28 Adaptor Bushing.
① Part #7270999 may be used in some versions.

RACK
PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R14	1200Ω		1126	Note 1
R15	33Ω			
R16	180Ω 5%	2	1190	
R17	150Ω	2	1189	

Note 1. Not used in some versions.

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R18	. 47Ω	2	7270608	Fusible
R19	10Ω		1101	
R20	200Ω		1213221	
R21	180Ω		1116	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	9Ω tap ② 3. 4Ω	7269650							Not used with portable unit.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP2	6" X 9"	PM	5Ω	7270842	69A3Z5	Not used with portable unit

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L9	Antenna Coil	7255738	19-1004	BC-565	4610		6. 5 Microhenries

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L10	1A	. 26Ω	. 003 Hy.	7269647						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M7		4A 32V	7270622					

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M8	Switch	1221152	Speaker Interlock
	Speaker Ass'y	Model 989145	Complete, for 6" X 9" Rear Seat Speaker Installation

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	7270385	Control, Four used
Escutcheon	7070794	Includes Dial

WIRING DATA

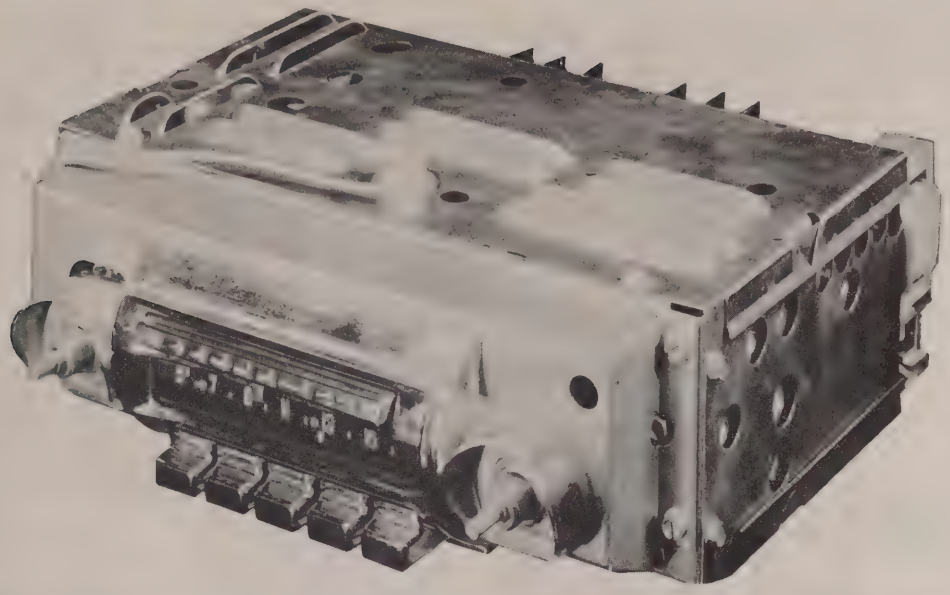
General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PONTIAC
MODEL 988823

PONTIAC
MODEL 988823



TRADE NAME	Pontiac Model 988823 (for 1958 Pontiac Automobiles)
MANUFACTURER	Delco Radio Div., G.M. Corp., Kokomo, Indiana.
TYPE SET	Battery Operated Custom Built AM Automobile Receiver with Transistorized Output
TUBES (Five)	Types 12DZ6 RF Amplifier, 12AD6 Converter, 12EA6 IF Amplifier, 12DV8 Det-AVC-AF Amp., 12AL8 Trigger
POWER SUPPLY	12 Volt Storage Battery — RATING 2.6 Amp@12.6 Volts DC (4.5A when seeking)
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set Sensitivity control to position 1.
Set Tone control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262KC (400∿ Mod.)	High frequency stop.	Across voice coil.	A1, A2, A3, A4	To tune to high frequency stop, put a .070" feeler gauge in slot against high frequency stop. Tune manually to allow treadly bar arm to run against feeler gauge. Remove gauge. Adjust for maximum output.
	Check setting of oscillator coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
2.	68mmf.	High side to antenna receptacle. Low side to chassis.	1615KC	High frequency stop.	Across voice coil	A6, A7 A8	To tune to high frequency stop, put a .070" feeler gauge in slot against high frequency stop. Tune manually to allow treadle bar arm to run against feeler gauge. Remove gauge. Adjust for maximum output.
3.	"	"	600KC	Tune to 600KC signal.	Across voice coil.	A9, A10	Adjust for maximum output.
4.	"	"	1400KC	Tune to 1400KC signal.	"	A7, A8	"

With radio installed in car and antenna fully extended, tune in a weak station between 600KC and 1000KC and adjust A8 for maximum output.

POINTER ADJUSTMENT

With radio tuned to an 1100KC signal, adjust pointer adjustment so that pointer coincides with 1100KC amrk on dial.

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton to the left and out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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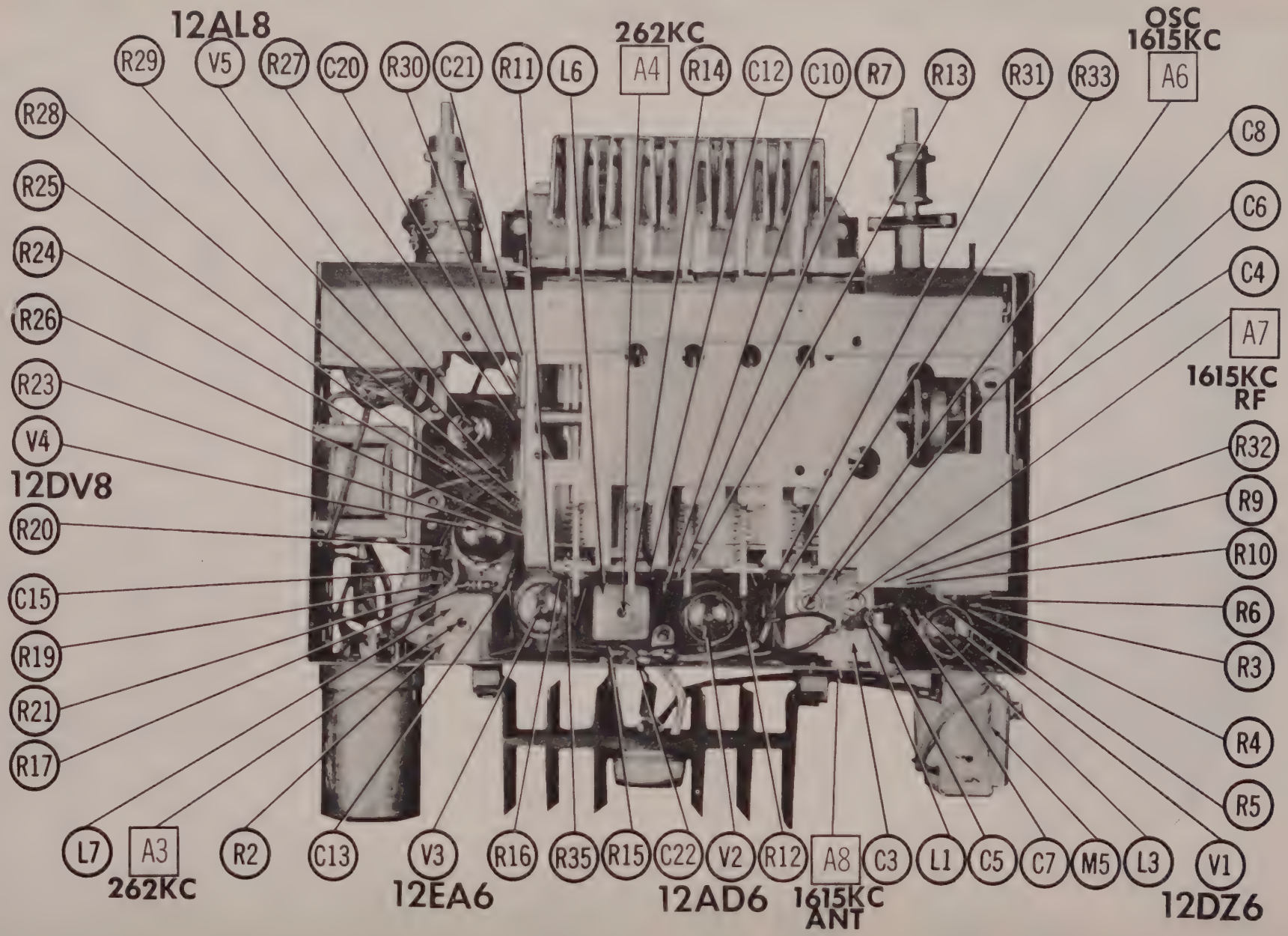
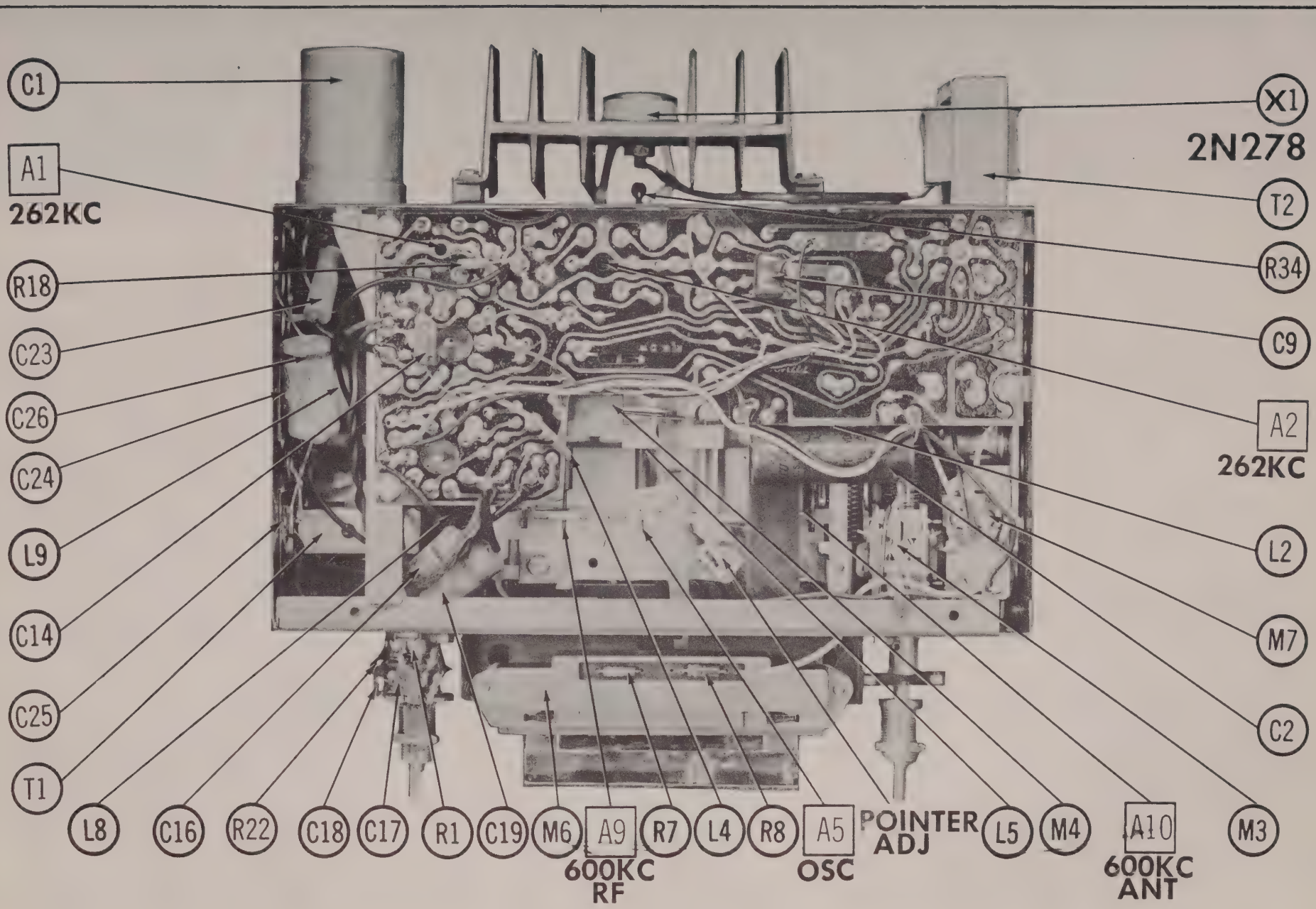
H595

SET 410 FOLDER 13



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	11	:1	1221159				TA-51			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10. 2Ω Tap@ 3-4Ω	7271527							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	6" x 9"	PM	3-4Ω	7270132	69A3	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	7255738	19-1004	BC-565	4610		6. 5microhenries
L2	Ant. Coil	1221138					
L3	RF Choke	7269684					1772 microhenries
L4	RF Coil	1221138					
L5	Osc. Coil	1221151					
L6	Input IF	1220990	16-6756	BC-317	13-PH1		
L7	Output IF	1221124					
L8	Hash Choke	1217846					1. 4 microhenries

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	. 92A	. 75Ω	. 011HY	7271321				TC-2		

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		7½A 32V	455640					

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Lamp	#57	#57
M3	Switch	7268030	Power Solenoid, Treadle Solenoid
M4	Switch	7269872	Station Selector
M5	Switch	7271425	Speaker Interlock
M6	Switch	7271264	Sensitivity
M7	Relay	7270545	
	Speaker Ass'y	Model 988838 Model 988839	Complete, for Dual 6" x 9" Rear Seat Speaker Installation
	Speaker Ass'y.	Model 988840 Model 988906	Complete, for 6" (or) 6" x 9" Rear Seat Speaker Installation
	Printed Board	7271496	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	529079	Control, Two Used
Knob	529077	Dummy
Knob	529078	Tone
Push Button	1221144	Five Used, Includes Front Bearing Plate and Slides
Pointer Ass'y.	1221146	
Dial	7270491	Calibrated
Backplate	7270486	Dial

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12DZ6	
V2	Converter	12AD6	
V3	IF Amplifier	12EA6	
V4	Det-AVC-AF Amp.	12DV8	
V5	Trigger	12AL8	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N278	Output					

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲1000	16	7269719	AFH3-00-97		WP300			R2424*
B	■500	16							
C	▲20	16							
C2	1000	1	7271557	PRS6V1000	BBR1000-6	TC310	TD-1000-6	MTH-06100	TVA-1104

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3A	15-65		7271397						
B	34								
C4	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C5	68		6369	BPD-000068	DD-680	L10Q68	UC-5468	5GA-Q68	
C6	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C7	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C8A									
B									
C			7268828						
D									
C9	200		7270129	1469-0002		5R5T2	MCE237	MS-32	5%
C10	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C11	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C12	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C13	100		1219498	1469-0001		5R5T1	MCE230	MS-31	5%
C14	100		1219498	1469-0001		5R5T1	MCE230	MS-31	5%
C15	47		6367	1468-000047	DD-470	1W5Q47	UC-5447	1FM-447	
C16	.02	200	6611	P288N-02	DD-203	CUB2S2	GEM-4122	2TM-S22	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C17	1000		6350	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C18	27		6364	DI-000027	DD-270	L10Q27	UC-5427	5GA-Q27	
C19	.22	200	6691	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C20	1000		6350	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C21	.022	200	6611	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C22A	220		6375	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
B	220			BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C23	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C24			1212278						
C25			1212278						
C26	.47	50		P288N-47		CUB2P47	GEM-2047	2TM-P47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	7270939		RTV-658C*		■ UE3821S	Tone
B	5meg	½						Volume, Tap ⓐ 1meg
C	Switch							Power On-Off
R2	100Ω	2	7269637		39-100		39-150	Transistor Bias

Speaker Fader (Part #7270413 may be used in some versions.

*Use XB-1 Adaptor Bushing

■ "STA-LOC" Equivalent: FG26A, OS875, RU56T16, IS1187, US-41

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

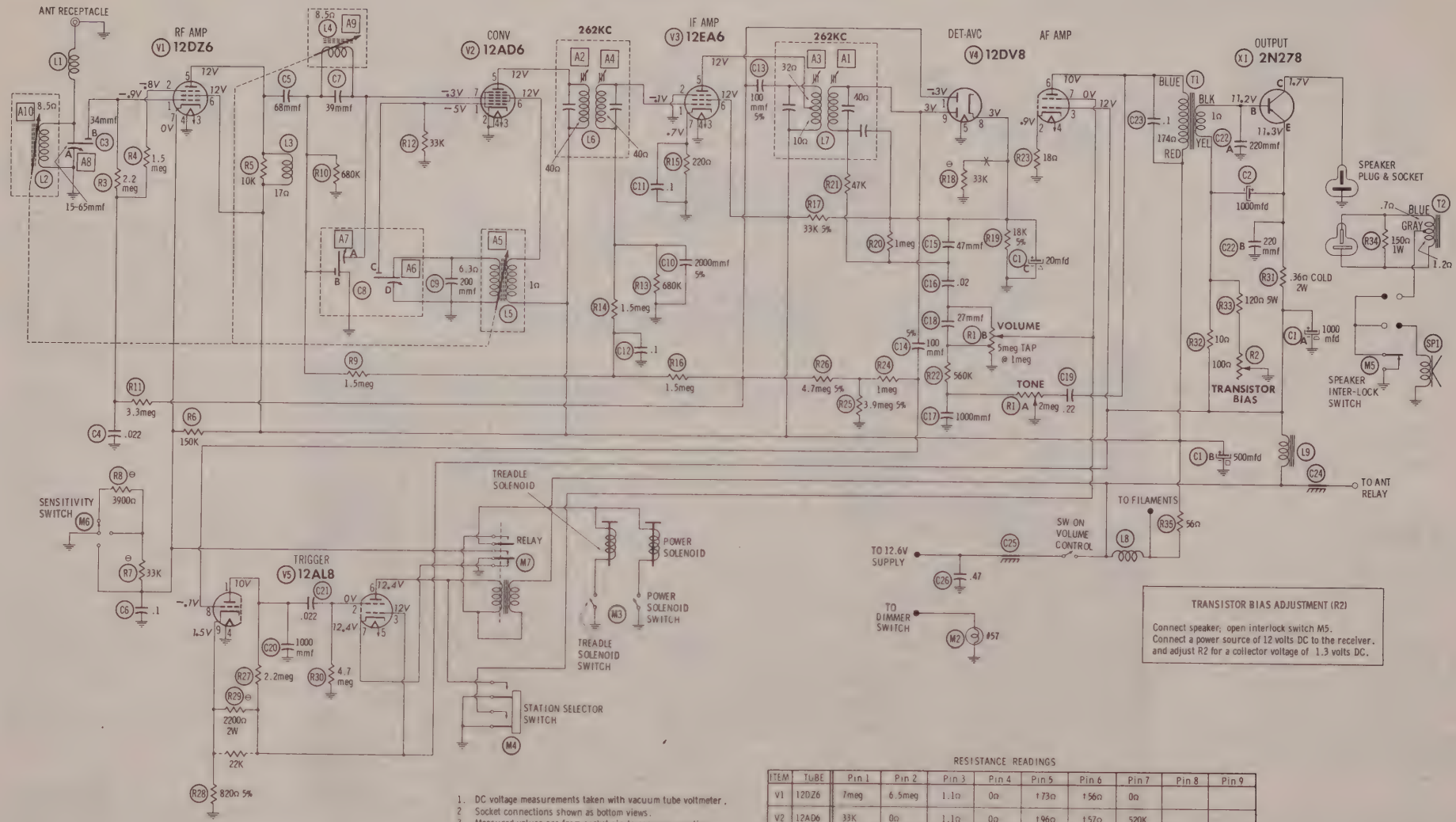
ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R3	2.2meg		1239	
R4	1.5meg		1237	
R5	10K		1137	
R6	150K		1225	
R7	33K			Note 1.
R8	3900Ω			Note 1.
R9	1.5meg		1237	
R10	680K		1123	
R11	3.3meg		1241	
R12	33K		1217	
R13	680K		1123	
R14	1.5meg		1237	
R15	220Ω		1117	
R16	1.5meg		1237	
R17	33K 5%		7271461	
R18	33K		1217	Note 2
R19	18K 5%		7271632	

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R20	1meg		1235	
R21	47K		1219	
R22	560K		1232	
R23	18Ω		104	
R24	1meg		1235	
R25	3.9meg		7271627	5%
R26	4.7meg		1221136	5%
R27	2.2meg		1239	
R28	820Ω 5%		7266231	
R29	2200			Note 3.
R30	4.7meg		1243	
R31	.36Ω Cold	2(WW)	7270608	Fuse Type
R32	10Ω		1101	
R33	120Ω	5	7271576	
R34	150Ω	1	1152	
R35	56Ω		1110	

Note 1. Part of Sensitivity Switch M6

Note 2. Not used in some versions.

Note 3. Some versions may use 3900Ω 5% in this application (Part #7266280)



TRANSISTOR BIAS ADJUSTMENT (R2)

Connect speaker; open interlock switch M5.
Connect a power source of 12 volts DC to the receiver.
and adjust R2 for a collector voltage of 1.3 volts DC.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	7meg	6.5meg	1.1Ω	0Ω	†73Ω	†56Ω	0Ω		
V2	12AD6	33K	0Ω	1.1Ω	0Ω	†96Ω	†57Ω	520K		
V3	12EA6	500K	0Ω	1.1Ω	0Ω	†66Ω	†56Ω	220Ω		
V4	12DV8	2meg	18Ω	†.7Ω	1.1Ω	0Ω	†230Ω	0Ω	7800Ω	1meg
V5	12AL8	†2.2meg	4.7meg	†.8Ω	0Ω	1.1Ω	†180Ω	0Ω	3meg	230Ω

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

† MEASURED FROM JUNCTION OF R35 AND L8

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

RCA VICTOR MODELS 1BT41, 1BT46, 1BT48 (Ch. RC-1181)

RCA VICTOR MODELS
1BT41, 1BT46, 1BT48 (Ch. RC-1181)

MODEL 1-BT-46

RCA VICTOR MODELS
1BT41, 1BT46, 1BT48 (Ch. RC-1181)

TRADE NAME	RCA Victor Models 1-BT-41, 1-BT-46, 1-BT-48 (RC-1181)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N.J.
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	4.5 Volts DC
RATING	6.5MA @ 4.5 Volts DC (No Signal, Min. Vol.) 8.5MA @ 4.5 Volts DC (Signal, Normal Vol.)
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Direct	High side to junction of L1 and M4. Low side to common.	455KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A5	"
4.		"	600KC	600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking gang thru 600KC signal. Repeat alignment procedure.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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H535

SET 410 FOLDER 14

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N411	Converter		2N411	2N486		PNP
X2	2N409	1st. IF Amp.		2N409	2N482		PNP
X3	2N409	2nd. IF Amp.		2N409	2N482		PNP
X4	2N407	Driver	CBS2N180	2N407	2N362		PNP
X5	2N407	Output	CBS2N180	2N407	2N360		PNP
X6	2N407	Output	CBS2N180	2N407	2N360		PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	100	10	103015		NL100-10	TT15X100	ML100-15		TE-1162
C2	10	10	103382	PWE10010	NL10-10	TT12X10	ML10-15		TE-1114
C3	45	10	104338	XPP-10050	NL50-10	TT10X50	ML50-15		TE-1160
C4	10	10	103382	PWE10010	NL10-10	TT12X10	ML10-15		TE-1114
C5	100	10	103015		NL100-10	TT15X100	ML100-15		TE-1162

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	50000		105715	BPD-05				5HK-S5	
C7	10000		105716	BPD-01	DD-103	BYA6S1	DC5I1	5HK-S1	
C8	50000		105715	BPD-05				5HK-S5	
C9	50000		105715	BPD-05				5HK-S5	
C10	6.8		105718	NPO-SI 6.8	TCZ-6R8	CTA6V68C	ZT-5568	5TCCB-V68	10%
C11	50000		105715	BPD-05				5HK-S5	
C12	50000		105715	BPD-05				5HK-S5	
C13	3.3		71503	NPO-SI 3.3	TCZ-3R3	CTA6V33C	ZT-5533	5TCCB-V33	10%
C14	50000		103380	BPD-05				5HK-S5	
C15	10000		105716	BPD-01	DD-103	BYA6S1	DC5I1	5HK-S1	
C16	10000		105715	BPD-01	DD-103	BYA6S1	DC5I1	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K	1/4	105728					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R2	6800Ω		502268	
R3	27K		502327	
R4	1000Ω		502210	
R5	82K		502382	
R6	220Ω		502122	
R7	470Ω			Note 1
R8	3900Ω			Note 2
R9	1000Ω		502210	
R10	27K		502327	
R11	33K		502333	

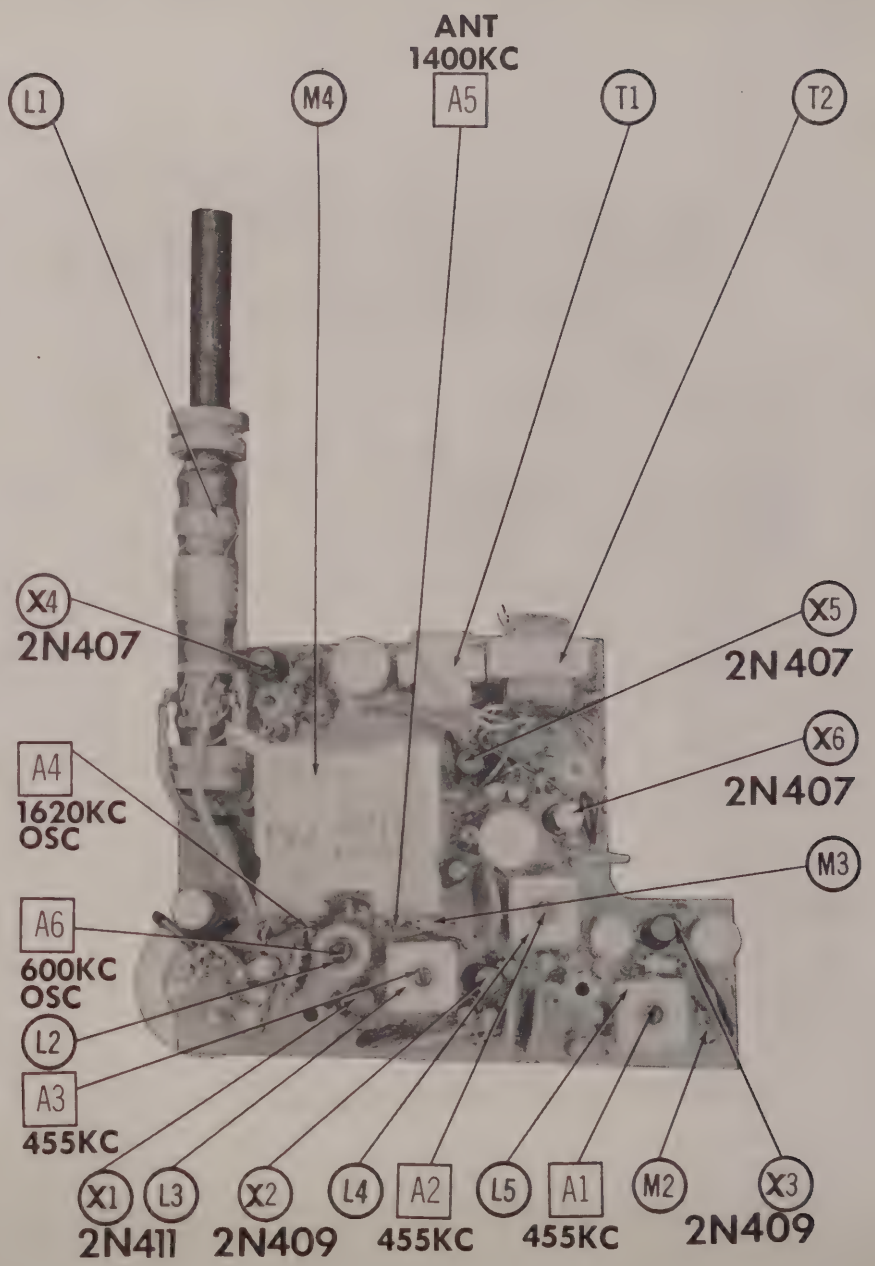
ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R12	1000Ω		502210	
R13	560Ω		502156	
R14	2700Ω		502227	
R15	22K		502322	
R16	4700Ω		502247	
R17	33Ω		502033	
R18	470Ω		502147	
R19	390Ω 5%		502139	
R20			103021	Note 3
R21	4700Ω		502247	

Note 1. Some versions may use 680Ω in this application (Part #502168).
Note 2. Some versions may use 15K in this application (Part #502315).
Note 3. 270Ω @ 25°C; 39.7Ω @ 75°C.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.1 :	1	105727						

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	260Ω CT	3-4Ω	105731							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	79696A	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		RCA Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	105730					
L2	Osc. Coil	105726					
L3	1st. IF	105723					
L4	2nd. IF	105724					
L5	3rd. IF	105725					

BATTERIES

ITEM No.	VOLTAGE	RCA Victor PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	VS-035		1		935		M-14	3 used

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		RCA Victor PART No.	CBS PART No.	SYLVANIA PART No.	
M2		101615	1N60	1N60	Detector (Pigtail)
M3		101615	1N60	1N60	Overload Limiter (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M4	Tuning Cap.	105732	2 Gang (Ant. 8.8-132mmf, Osc. 9.7-87mmf)
	Printed Board	105751	Less C1, R1, T1, T2, M4 and Transistors
	Earphone	RK-219	

CABINETS & CABINET PARTS

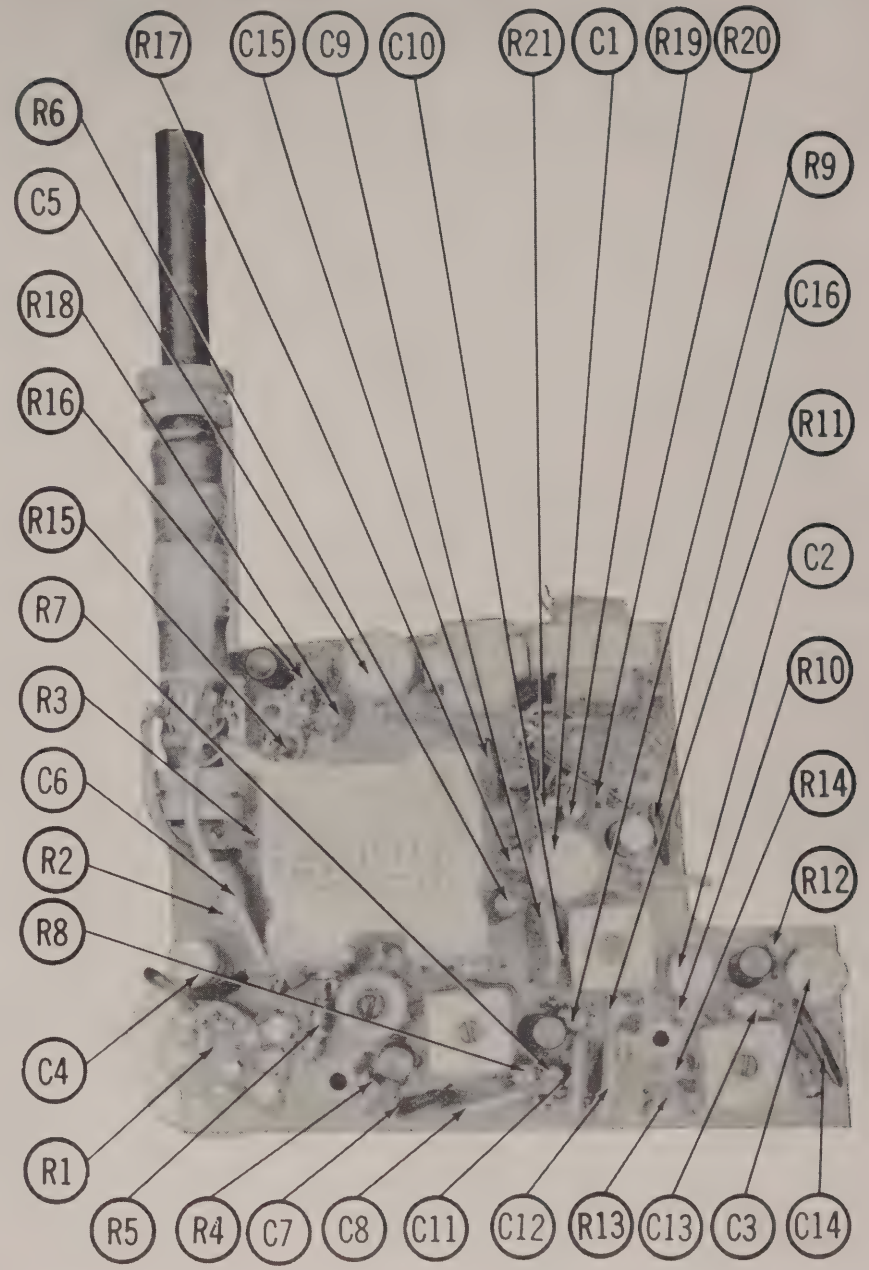
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

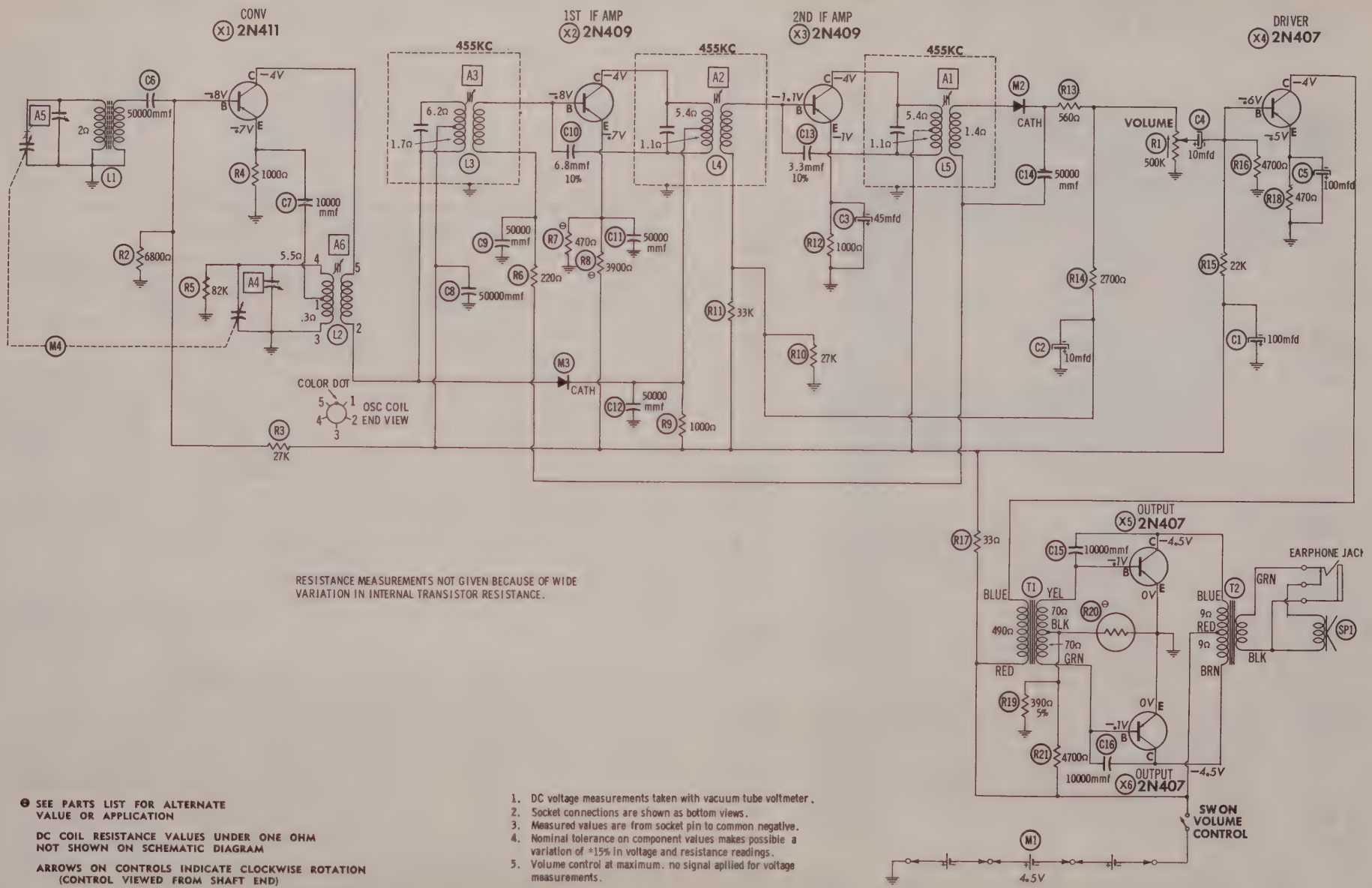
NAME	PART NO.	DESCRIPTION
Knob	105729	Tuning
Knob	105736	Volume
Screw	105737	For Tuning Knob
Case	X4305	Charcoal, Model 1-BT-46
Case	X4304	Antique White, Model 1-BT-41
Case	X4303	Russet, Model 1-BT-48
Handle	105749	Charcoal, Model 1-BT-46
Handle	105748	Antique White, Model 1-BT-41
Handle	105747	Russet, Model 1-BT-48

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW





❻ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal applied for voltage measurements.

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REVERE
MODELS T-1100, T-1120, TR-1200

REVERE
MODELS T-1100, T-1120, TR-1200

REVERE
MODELS T-1100, T-1120, TR-1200

GENERAL INFORMATION

Revere Models T-1100, T-1120, and TR-1200 Tape Recorders feature a single three position function knob which performs the electrical and mechanical functions for "Record", "Stop", and "Play" operations. All three units basically incorporate the same tape transport mechanism but differ slightly in amplifier circuitry and component values. The existing differences are best pointed out in the schematic diagrams, exploded views, and mechanical & electrical parts lists.

The Model TR-1200 is the same as Model T-1100 except for the addition of the B199-6 Radio Tuner Sub-Assembly. Model T-1120 is the same as Model T-1100 except for a built-in stereophonic head and preamplifier (B199-11) for the lower channel. Treatment of the subject matter pertain to the machines as being used as a monaural unit and information given for Model T-1100 will cover Models T-1120 & TR-1200 unless noted otherwise.

These units are designed to record two tracks of material on standard width recording tape, which doubles the playing time of a tape reel with no loss of frequency response of quality. Recordings may be made from microphone, phonograph, AM-FM tuner, Hi-Fi systems, external radio or television, in addition to those made directly from the self-contained radio used in Model TR-1200.

CAUTION: Do not use on direct current. Check name plate at rear of recorder for proper current and voltage.

Manufactured by:

Revere Camera Company

320 East Twenty-First Street
Chicago 16, Ill.

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C322

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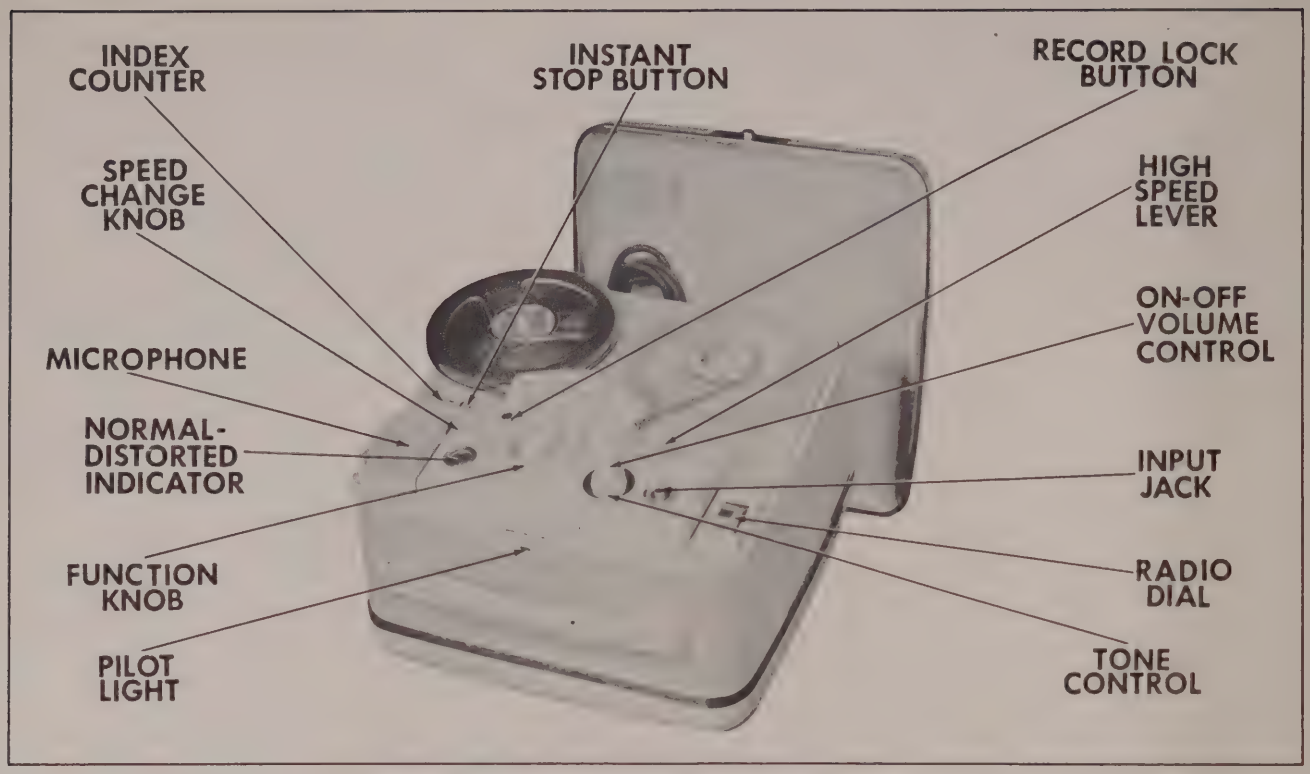


Figure 1.

SPECIFICATIONS

Tape Speeds — 3 3/4 and 7 1/2 ips ± 2%.

Head — Half track recording head (Models T-1100 & TR-1200).

Head — In-line stacked head with balanced hum bucking construction (Model T-1120).

Frequency Response (Models T-1100 & TR-1200) — ±3db, 85-7000 cps @ 3 3/4 ips. ±3db, 75-12000 cps @ 7 1/2 ips.

Frequency Response (Model T-1120) — Upper channel: ±3db, 75-13,000 cps @ 7 1/2 ips. ±3db, 75-8000 cps @ 3 3/4 ips. (Recording & Playback).

Lower channel: ±3db, 75-13,000 cps @ 7 1/2 ips. (Playback only)

Signal To Noise Ratio — Greater than 48 db.

Signal From Lower Channel Pre-Amp Output (Model T-1120) — 0.5 — 1.5 volts.

Crosstalk (Model T-1120) — Less than 50 db.

Wow & Flutter — Less than .3% (Both speeds).

Distortion — Overall amplifier and tape distortion at low levels is less than 1%, and at maximum output of 5 watts is 8% at 1000 cps.

Recording Indicator — "Normal" half of indicator indicates 1.5% distortion (or 8db from saturation), and "Distorted" half indicates 8% distortion.

Reel Size — up to 7".

Tracks — Dual.

Track Selection — Manual turnover.

Tape Loading — Drop-in-slot type.

Fast Forward & Rewind — Approximately 90 seconds on a 7" reel (1200 ft.)

Playing Time (7" Reel) — 2 hours @ 3 3/4 ips (1 hour each track). 1 hour @ 7 1/2 ips (1/2 hour each track).

Inputs — Microphone input (short plug) 10 megohms impedance; accepts voltages from 500 microvolts to 0.2 volts. Radio-Phono input 1 megohm impedance; operates with voltages from 0.025 to 10 volts.

Output — 3.2 ohm with negative feedback suitable for direct connection to 3-4 ohm speakers, high impedance amplifier inputs, or earphones.

Size — 9 1/2" x 14" x 13 1/2" (approx.)

Weight of Recorder — 27 lbs.

Power Requirements — 105-120 Volts AC, 60 Cycles.

Power Consumption — 90 Watts (Model T-1100). 100 Watts (Model TR-1200).

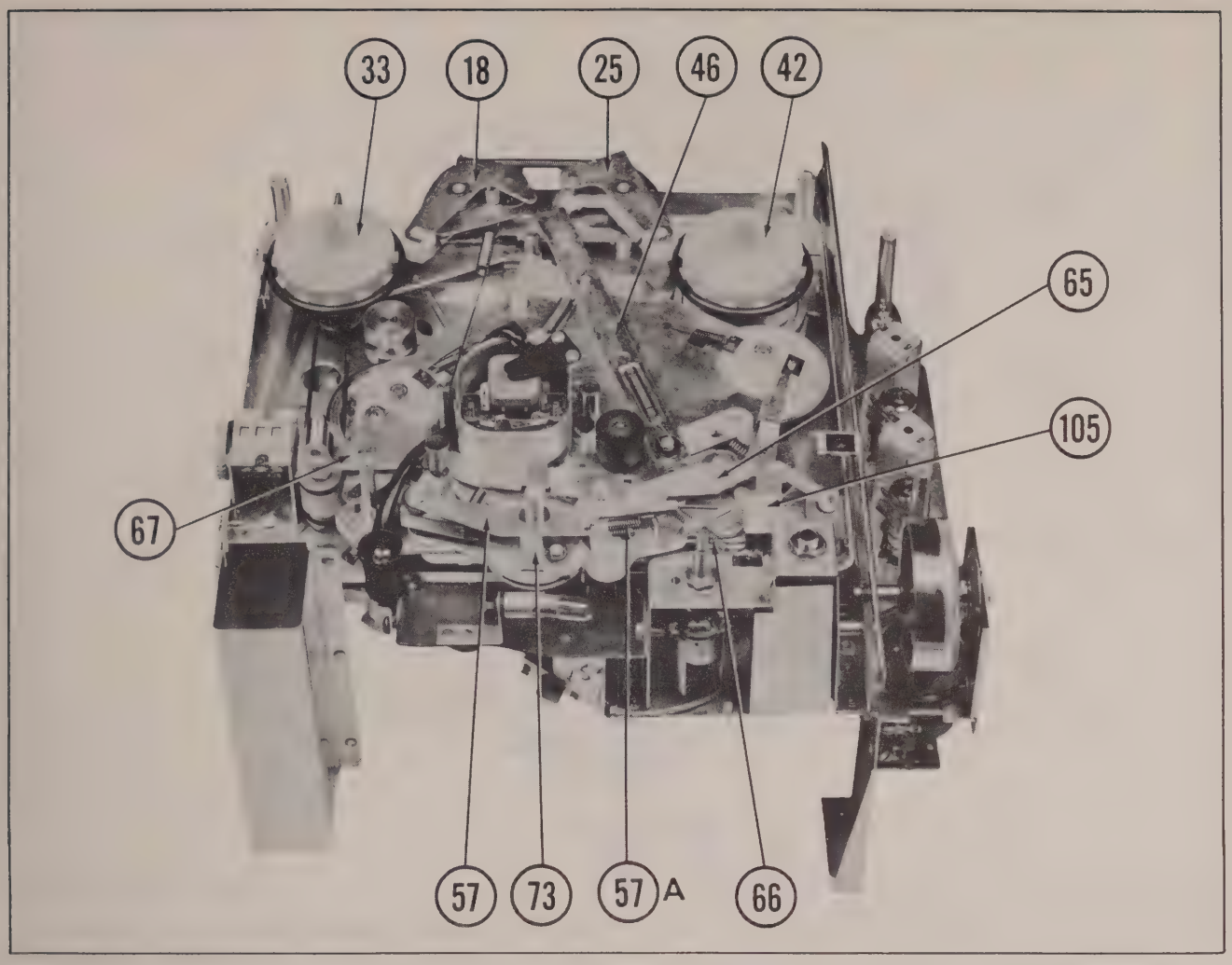


Figure 2.

FUNCTIONS OF CONTROLS, INDICATORS & SWITCHES

(Refer to Figure 1.)

On-Off-Volume Control

Initial clockwise rotation of this control supplies power to the entire recorder; further rotation regulates the volume for both the recording and play-back operations.

Tone Control

This control is designed to give three distinct tonal extremes, and can be varied continuously between them to produce a blend of tone suitable to any type of program. The tone control is automatically disconnected when recording.

Function Knob

All electrical and mechanical functions for "Play" and "Record" operations are performed by this single three position knob. Also, for convenience and protection, the Function Knob is returned to "Stop" position when the power On-Off-Switch is turned off, thus disengaging all pressure pads and rubber idlers.

Speed Change Knob

Operation of this knob selects either 3 3/4 ips, (slow speed, "S"), or 7 1/2 ips, (fast speed, "F"), tape speeds while the recorder is in any function. The fidelity on 7 1/2 ips selection is greater insofar as recording-reproduction is concerned.

Automatic Record Lock Button

This is a safety device preventing the Function Knob to be turned to "Record" position, thus guarding recordings from accidental erasure. The Lock Button is re-set whenever the Function Knob returns to the "Stop" position. To make a recording, the Record Lock Button must be depressed before Function Knob can be turned to "Record" position.

Rapid — Forward Rewind Lever

This lever is used to skip ahead to any point on the tape or to rewind tape onto the supply reel. By moving this lever back & forth the tape can be inched along in either direction to find an exact point on the tape. This lever can be moved while the Function Knob

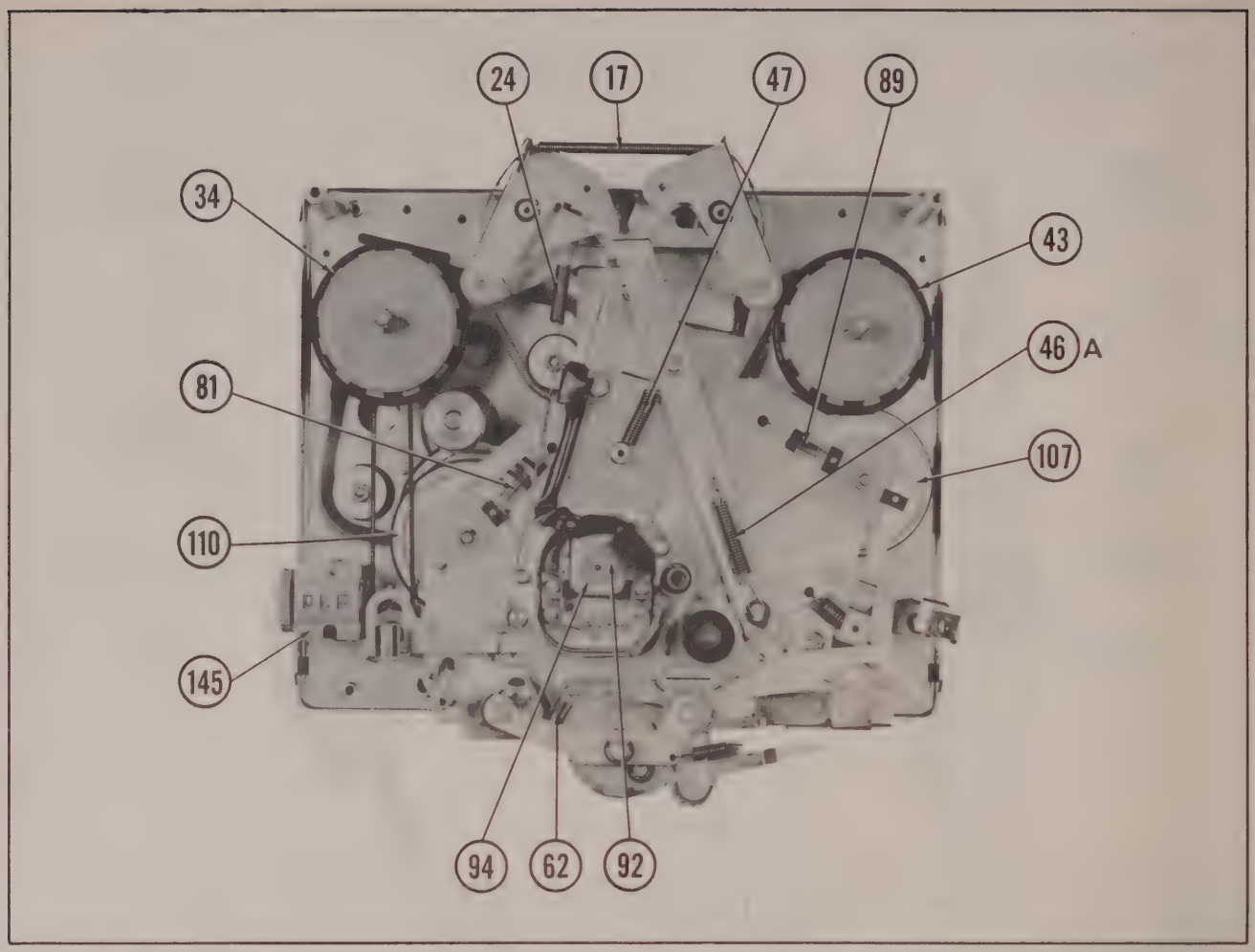


Figure 3.

is in either "Record" or "Play", and the lever will automatically return the Function Knob to "Stop".

Manual Start-Stop Button

This button is provided to instantly stop the tape in either "Record" or "Play" functions. Examples of its use are: to prevent recording of unwanted breaks in radio programs; to noiselessly hold back the tape for instantaneous starts in either "Record" or "Play" functions; to precisely pre-set the record level while the Function Knob is in "Record" position; to momentarily stop tape in transcribing.

Record Level Indicator

This indicator takes the guesswork out of setting the recording level. The volume control should be adjusted until the "Normal" half of the indicator flashes and no flashing occurs at the "Distorted" half. If it is desired to pre-set the level in "Stop" position, turn the tone control to treble.

Index Counter

This is a precision revolution Counter enabling pinpointing of selections. The Counter is re-set by turning the Counter wheel back.

Dual Hi-Lo Input Jack

The Input Jack is designed to make the proper selection between the low level microphone (requires short input plug, 15/16" long) or high level radio-phono connection (requires long input plug, 1 3/16" long), thus making two input jacks unnecessary. When the longer input plug (three circuit) is used, the speaker is automatically connected for monitoring in "Record" position or for public address in "Stop" position. When the shorter plug is used, the speaker is left disconnected. Regardless of which input plug is used, in both cases the built-in radio used in Model TR-1200 is disconnected.

Output Jack

Located on the rear panel, this jack can be used to connect accessories such as a remote speaker (3.2Ω), or earphones. The Attachment Cord can be used for this purpose. See Auxiliary Parts List page 24 for listing of accessory parts. The speaker in the recorder is automatically disconnected whenever a plug is inserted in the Output Jack.

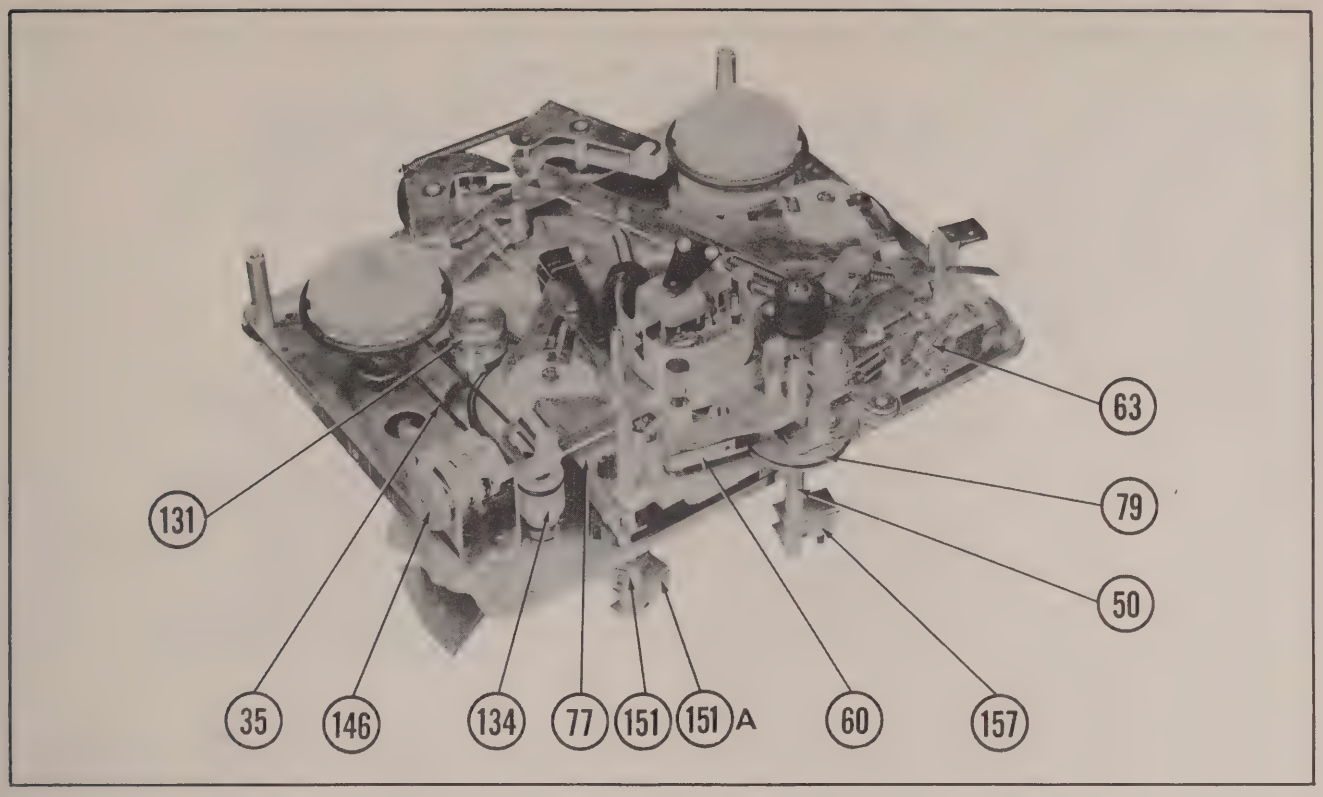


Figure 4.

OPERATING INSTRUCTIONS

Threading The Tape

1. Plug line cord in socket provided at the rear of recorder, and plug the line cord plug into a convenient wall receptacle of the proper rating as specified on name plate.

2. Place full supply of tape (glossy side out, i.e. "A" wind) on left spindle and empty reel on right spindle, making sure the reels are fully seated.

3. Unwind about 14" of tape from the supply reel. Hold a section of the tape straight with both hands and insert the tape in the tape slot making sure the dull coated side of the tape faces the rear of the recorder. Feed the end of the tape into one of the radial slots in the empty reel. Rotate the reel counterclockwise until the tape is secured and all slack is taken up between reels.

To Record From Microphone

Note: The Revere automatic high frequency erase removes previous recorded sound when new material is recorded; therefore, no special step is necessary to erase recordings before new recordings are made. The Erase functions only when the Function Knob is in "Record". By turning the volume control down, the recorder will erase without putting new sound on the tape.

1. Insert microphone plug firmly into input jack.

2. Turn tone control to treble, and while talking into the microphone adjust the volume control until "Normal" half of indicator flashes and no flashing occurs at the "Distorted" half.

3. Set the index Counter to zero. While holding the Record Lock Button in its depressed position, turn the Function Knob to "Record" position.

To Record From Radio, TV, Or Phonograph

1. To Record From Radio or T.V. — Insert Attachment Cord plug into the input jack on the recorder. Connect the cord clips to the radio or T.V. speaker terminals. Proceed with recording as described in "To Record From Microphone".

2. To Record From Phonograph — Insert standard phono plug, used with most crystal or magnetic type phonographs, into input jack on recorder. If standard phono plug is not used, Attachment Cord may be used. Proceed with recording as described in "To Record From Microphone".

Monitoring Recordings

The longer 1-3/16" standard phone plug, when inserted in the input, turns on the recorder speaker for monitoring radio, T.V., or phono. To monitor mike recordings, a high impedance headset can be plugged into the output jack. Monitoring mike recordings from the recorder's speaker can be accomplished by using the microphone P.A. extension cord accessory. (See Auxiliary Parts List). With this cord, the speaker is connected for Public Address in "Stop" position and Speaker Monitoring in "Record" position.

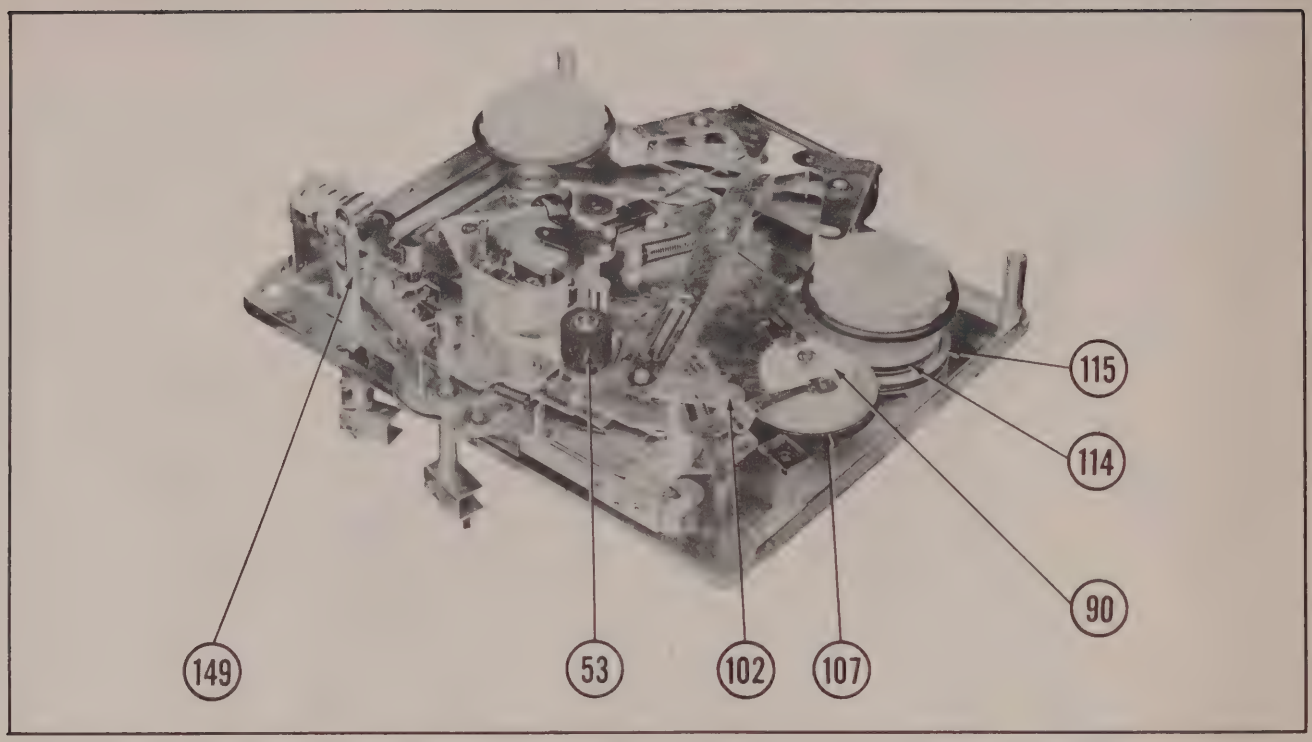


Figure 5.

To Operate Radio-Recorder Combination (Model TR-1200)

1. To Listen To Built-In Radio — Any plug must be removed from recorder's input jack. Turn Function Knob to "Stop" position, and adjust tone & volume controls to desired levels. To disconnect Radio, while in "Stop" position, any plug can be inserted into the input jack or the Radio can be de-tuned.

2. To Record From Built-In Radio — Any plug must be removed from the input jack. No external connections are necessary. Proceed with recording as described in "To Record From Microphone".

3. When external sources of recording material are used, the built-in radio will be automatically disconnected by the insertion of the respective plug into the input jack.

Twin-Track Recording

1. These recorders are designed so that each reel of tape holds two full length recordings, one on each half of the dull side of the tape.

2. After the first track has been recorded, a second recording can be made on the same side of the tape by removing the reels from the recorder, turning them over, and placing them on opposite spindles.

3. Thread the tape and proceed with the recording as previously described.

4. After the second track has been recorded, the first track is ready to be played, without rewinding, by changing reels as described in Step No. 2 above.

Splicing & Editing

Note: Since it is impossible to edit and splice one track without affecting the other, recordings which are to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements may be inserted between selections, etc., and unused sections of tape can be spliced together for re-use.

2. For best results, cut tape at a slight diagonal, join ends together with splicing tape on the glossy side, and trim off any excess width. Use Scotch #41 tape to prevent bleeding of adhesive.

3. For very precise editing, turn Function Knob to "Play" position and push in Instant Stop Button. Turn reels by hand to locate a single word or sound. Cut or mark tape at this sound by removing the head covers and marking tape at the right hand pole face of the Sound Head.

To Rewind Tape

1. The tape may be rewound at any time by moving high speed lever (105) to the left. In so doing, the tape on the take-up reel is transferred to the supply reel.

2. By moving the high speed lever back & forth (between rewind & neutral) the tape can be inched along to the number previously noted on the index counter.

3. After reaching the desired portion of the tape, move the high speed lever to the middle or neutral position to stop all movement of the tape.

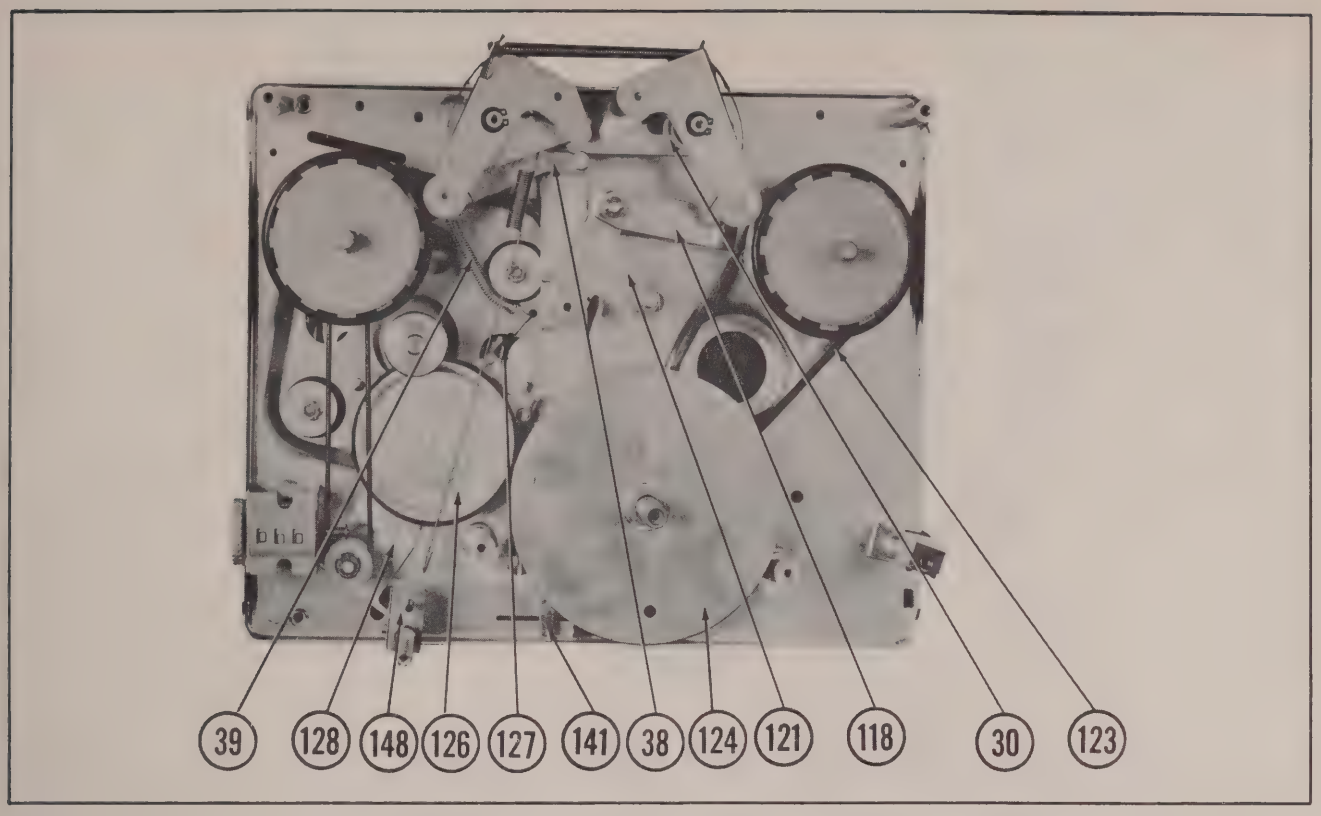


Figure 6.

To Play Back Recordings

1. Move high speed lever (105) to the left and wind tape back to the original counter setting. Return high speed lever to the center position to stop the reels.

2. Turn the Function Knob to "Play" position and adjust volume and tone controls to the desired listening level.

Fast Forward

1. Any portion of a recording may be skipped, or any selection may be located in a few seconds by moving the high speed lever (105) to the right. A few seconds of "Fast Forward" is equivalent to several minutes of playing time.

2. By moving lever (105) back & forth, the tape can be inched along to an exact point.

3. After reaching the desired portion of the tape, move the high speed lever to the middle or neutral position to stop all tape movement.

Connecting To Hi-Fi Systems

1. The recorder can be connected to Hi-Fi systems by using Revere Hi-Fi cables (see Auxiliary Parts List).

2. To connect for recording, plug a Hi-Fi cable between the recorder's input jack and the jack of an amplifier marked "Detector", "Tape", "Recorder Input", or "Pre-Amp Output".

3. To connect for playing a tape, plug a Hi-Fi cable between the recorder's rear output jack and the jack of an amplifier marked "Auxiliary", "TV", "Tuner", or "1V Input".

4. While tape is playing, set the recorder's tone control so that the black dot on the top plate assembly is opposite the blank space between treble and bass; set the volume control to flash the normal half of the indicator. Thereafter, adjust the Hi-Fi amplifier volume & tone to desired listening level.

To Use As Public Address System

1. Insert microphone plug into the Microphone P.A. Extension Cord. Plug Extension Cord into the recorder's input jack.

2. Turn Function Knob to "Stop" position and adjust volume & tone controls to desired listening level.

TIPS ON RECORDING WITH A MICROPHONE

In recording, the most satisfactory results are obtained when the microphone is held about one foot from the mouth. The microphone should not be placed on the same table with the recorder, or on a piano or radio, as it may pick up vibrations and produce a noisy recording. The pre-setting of the record level with either microphone or radio will be more accurately set if the tone control is placed in treble. In monitoring with the recorder's speaker, the microphone must be kept as far from the speaker as possible. Best results will be obtained if the speaker and microphone are in separate rooms. Feedback and howling will occur if this precaution is not taken.

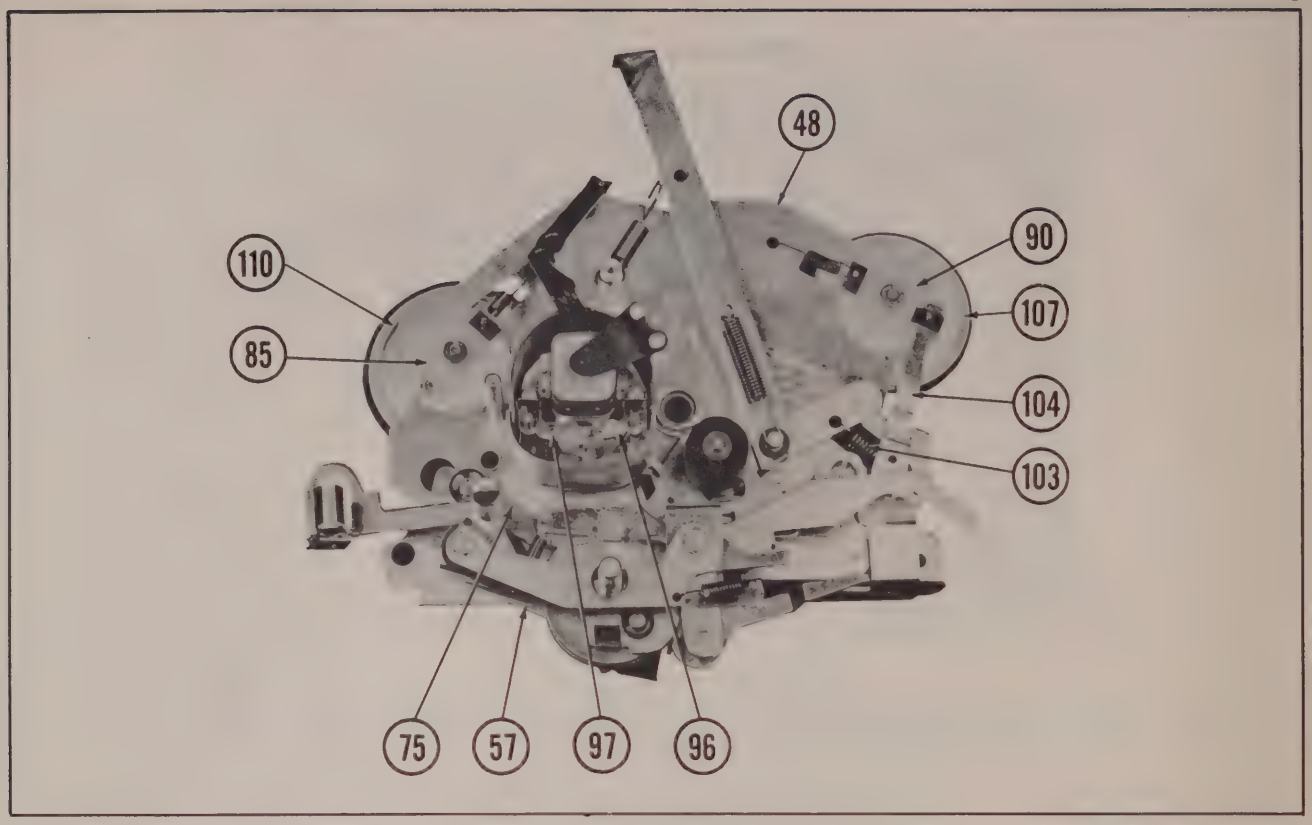


Figure 7.

DISASSEMBLY INSTRUCTIONS

To Remove Main Top Plate Assembly

This is done to expose most of the tape transport mechanical assembly. On Model TR-1200 remove two screws from Radio perforated top plate before attempting to remove Main Top Plate Assembly.

1. Pull "up" to remove plastic Function Knob (15), on-off Volume Control Knob (12), Tone Control Knob (13), Volume Control Nameplate (14), and Rear Head Cover (3). Remove High Speed Knob (9) by removing its rear screw. Remove Dual Speed Control Knob (11) by removing its top retaining screw.

2. Remove the following screws: Two Phillips head wood screws in front of the control panel, one screw above High Speed Knob, and five screws between the reel spindles.

3. Press the Instant Stop Button, and pry Top Plate Assembly "up" starting at the rear.

To Remove Recorder From Case

1. Remove large Phillips head screw with cup washer below Output Jack at rear of case.

2. Remove two small Phillips head screws attaching rear nameplate.

3. Remove five large Phillips head screws near the right and left sides of the bottom Tube Replacement Grille.

4. Lift the unit carefully up out of the case. Length of speaker cable permits speakers to remain with case.

5. Unplug speaker cable.

To Remove Amplifier From Mechanism

This is done to expose amplifier parts.

1. Unplug head plug and motor plug. Both are located on the bottom of the amplifier chassis. (See Fig. 8).

2. Remove speed Change switch arm (155), see Fig. 8, by removing its large Phillips head screw (156).

3. Remove three large Phillips head screws (3 used in Model T-1100 and 2 used in Model TR-1200) on the right compartment panel. The first of the four (4 used in Model T-1100) or the first of the three (3 used in Model TR-1200) need not be removed.

4. Remove two nuts holding left side of amplifier chassis to mechanism. Nuts are located under wire clamps, near motor (163). See Fig. 8.

To Service Radio Tubes (Model TR-1200)

Radio Tuner tubes can be checked or replaced without removing the recorder from its case by removing two small Phillips head screws from perforated top plate.

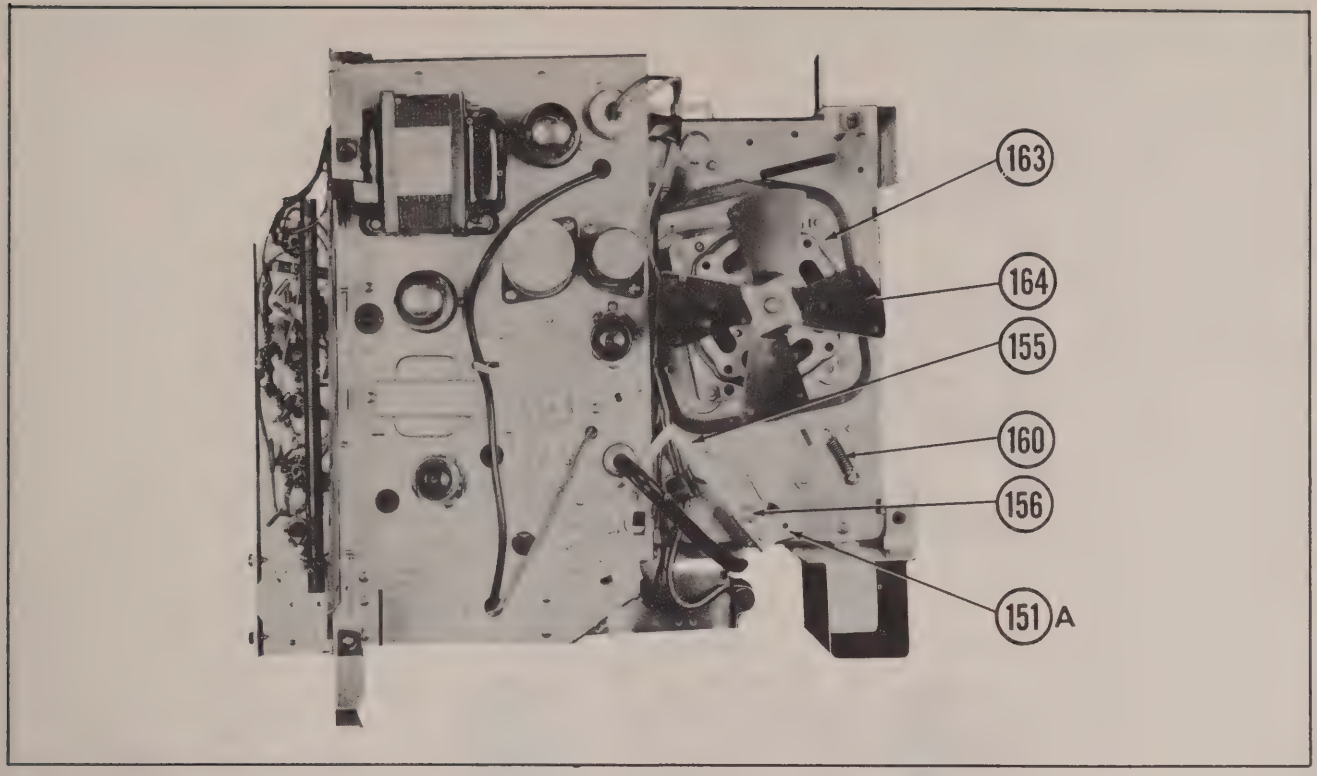


Figure 8.

To Service Amplifier Tubes

The Amplifier tubes can be checked or replaced without removing the recorder from its case by removing six Phillips head screws from the case bottom grille.

PRELIMINARY TESTS – REPAIR PROCEDURE

TEST PROCEDURE: FAILURE TO PASS ANY OF THESE TESTS INDICATES A FAULT THAT SHOULD BE REMEDIED.

1. Remove front and rear plastic head covers (3 & 4) by pulling "up". Clean head (94), tape guides, and capstan with alcohol.

2. Turn Function Knob (15) to "Stop" position, place high speed lever (105) in the middle or neutral position, and turn power "on".

3. Thread tape on recorder. Brakes should be engaged. Pull required on reel should not distort the tape and should offer sufficient drag to prevent spilling of tape. Drop tape into threading slot. Attach free end to take-up reel (right). Reel should rotate freely counterclockwise and drag when rotated clockwise.

4. Turn Function Knob to "Play" position. Felt pressure pads should press square against tape and cover shiny pole face area under tape. Pressure roller (53) should contact capstan and tape should move past the play-record-erase head at playing speed. Take-up reel should wind up tape as it passes capstan. The counter should tally each revolution of the supply reel.

5. Move high speed lever to the right (Fast Forward) or left (Rewind) and check to see that the Function Knob is automatically returned to "Stop" position; pressure roller and pressure pads should also be released. Tape should move in either direction at a greatly increased speed.

6. Return high speed lever to the middle or neutral position. Tape should stop without spilling or breaking.

7. Connect microphone and prepare to make a microphone recording. With tone control in treble, adjust volume control while speaking so that "Normal" half of indicator flashes and "Distorted" half does not. While holding the Record Lock Button in the depressed position, turn Function Knob to "Record". Turn speed change knob to make recordings at both speeds.

8. Rewind tape by moving high speed lever to left. The Function Knob should automatically return to "Stop" position, thus re-setting the Record Lock Button.

9. Play back the recording at both speeds. Check the volume, tone, and overall quality. Amplification at full volume should be sufficient, on a normally recorded tape, to deliver approximately 5 watts output.

10. Press Instant Stop Button while recorder is in either "Play" or "Record" position. Tape should stop instantly. Upon releasing Button, tape should start instantly and not spill off the reels.

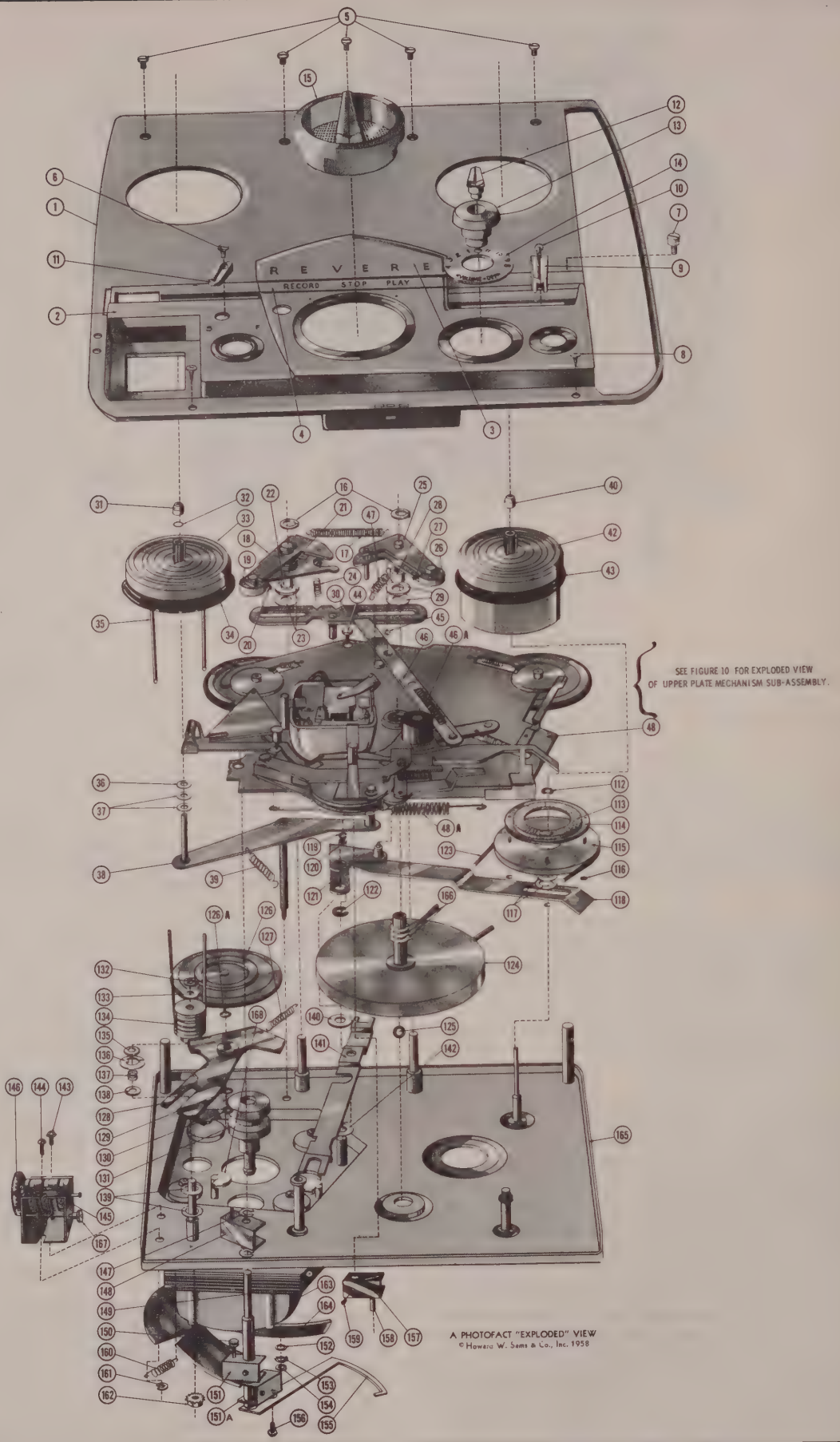
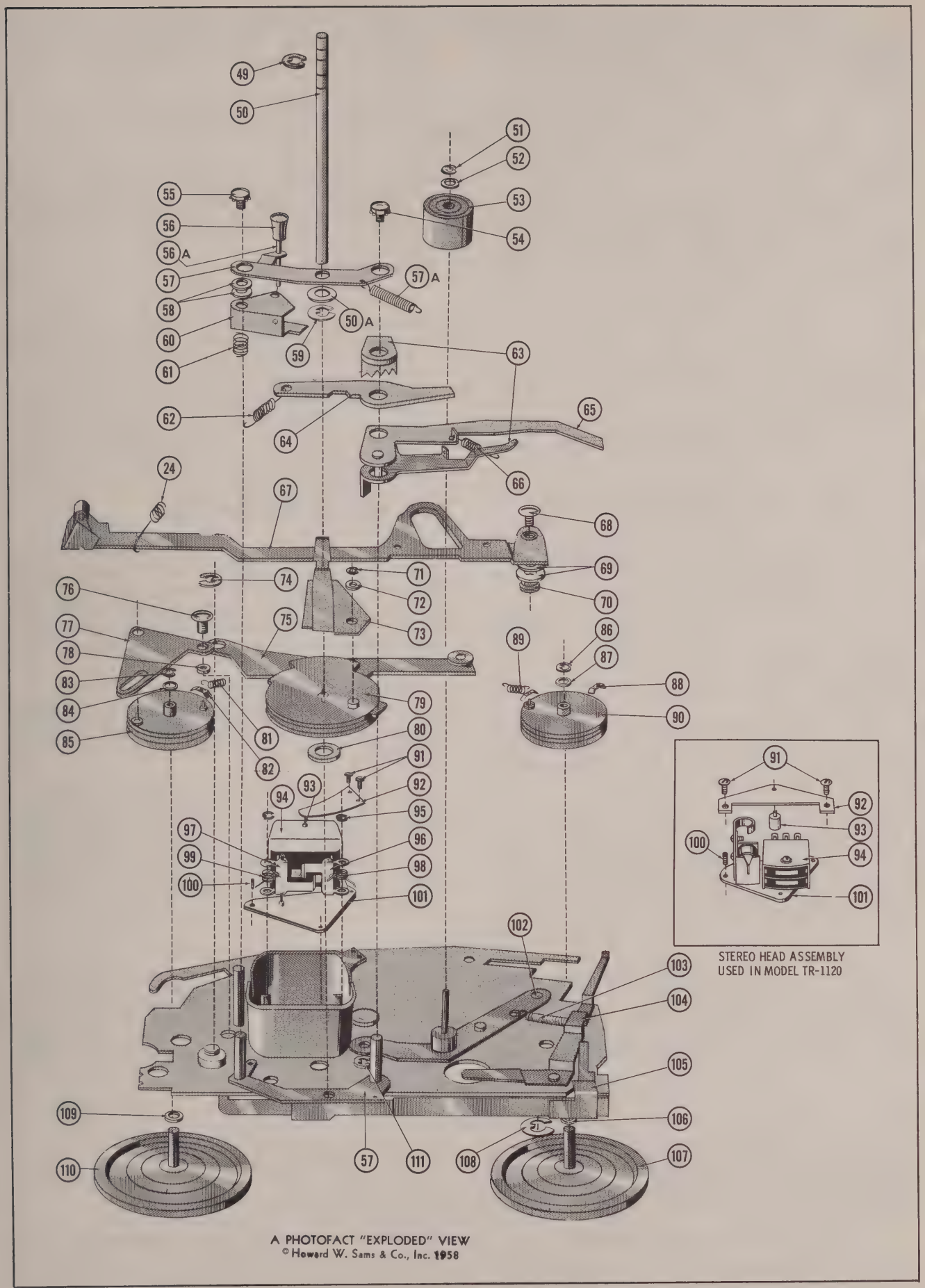

REVERE
RECORD STOP PLAY
SEE FIGURE 10 FOR EXPLODED VIEW OF UPPER PLATE MECHANISM SUB-ASSEMBLY.
A PHOTOFACT "EXPLODED" VIEW
© Howard W. Sams & Co., Inc. 1958

Figure 9. Exploded View Of Tape Transport Mechanism.



STEREO HEAD ASSEMBLY
USED IN MODEL TR-1120

Figure 10. Exploded View Of Upper Plate Mechanism Sub-Assembly.

11. Rewind tape and re-record over previous recording. All trace of previous recording should be erased on the portion of the tape re-recorded. Check irregularities in playing speed (wow and flutter).

12. With the Function Knob in either "Record" or "Play" functions, turning "off" the volume control should trip the Function Knob to "Stop".

ADJUSTMENTS

Replacing Pressure Pads

Felt pressure pads (see Auxiliary Parts List) may be glued on with household cement without removing pressure pad arms (96 & 97). Pads should cover shiny pole faces of head, and the side of pad touching head should be free of cement.

Replacing Sound Head

1. After removing head spring retainer (92), lift head & brass alignment plate from head shield cup. Unplug head cable plug.

2. Pry head from brass alignment plate. Note position of locating pins.

3. Place the head over the pins in the aligning plate in the proper location and press into place.

4. Replace alignment plate into head cup. The two brass pivot studs should engage the two holes in the plate. Replace head retaining spring.

5. Align head azimuth as described under "Play-Record-Erase Head Azimuth Adjustment".

Play-Record-Erase Head Azimuth Adjustment

It is very important that the head be lined up perfectly with the tape. If it is not, low output and loss of high frequencies will result. There is one adjustment to be made, which is as follows:

1. For alignment of the Play-Record-Erase Head a 1 mil alignment tape should be used. Thread tape on recorder and set controls in "Play" position. Adjust head for maximum playback sensitivity by turning adjustment screw (Item 100 on Figure 10). In lieu of alignment tape, play a previously recorded tape and adjust head for maximum treble tone. After adjustment is made cement alignment screw (100) to lock adjustment.

Bias Adjustment

The bias is measured by placing a 100 ohm resistor in series with the record element and measuring the voltage across this resistor with a meter capable of accurately reading .175 volts at a frequency of 40KC. Adjustment is made by means of the screwdriver adjusting slug on oscillator coil (L1). This screw adjustment is located near the rear of the left side apron of the amplifier chassis. The above value of bias will produce optimum results on most types of standard tape presently available.

Hum Balancing Adjustment

Hum control (R2) is provided to assure maximum signal to noise ratio. This control has been factory adjusted for optimum performance. If adjustment is required, screwdriver adjusting control is accessible through hole from bottom of amplifier chassis near head socket. Proceed with following to minimize hum:

1. Reverse power plug for minimum hum.

2. Turn Function Knob to "Play" position and adjust hum control (R2) for minimum hum at speaker, volume set at maximum.

3. For stereo pre-amp hum adjustment used in Model T-1120 turn recorder "on" and place Function Knob in "Play" position. Set volume control "up" on external auxiliary amplifier and adjust pre-amp hum control (R45) for minimum hum. The pre-amp hum adjustment is accessible by removing the bottom tube replacement cover.

CLEANING

The majority of defects, other than wear or breakage, can be traced to dirty surfaces. The play-record-erase head (94) capstan and pressure roller (53) are subject to an accumulation of tape coating residue, which is worn off the tape as it passes these parts. This accumulation should be periodically removed since it will cause faint recording and poor play-back. Wipe off the above surfaces carefully with a clean cloth. If dirt is caked or hard and will not come off with a dry cloth, dampen cloth slightly with alcohol.

LUBRICATION

All moving parts are permanently lubricated. Under normal use no further lubrication is necessary. In heavy duty service, the following parts should be lubricated once a year with a drop of #10 motor oil:

1. The top and bottom motor bearings.

2. The top and bottom flywheel (124) bearings.

3. Pressure roller (53) bearings.

4. All idler and drive wheel bearings.

5. The reel spindle bearings.

The basic rule is — do not over lubricate. Oil must be kept off all rubber idlers, belts, and periphery of flywheel and off parts that might transfer oil to them. Always wipe excess lubricant from parts that have been lubricated.

No Tape Drive In "Play" Or "Record"

1. Pressure roller spring (46A) disconnected or broken, resulting in pressure roller (53) not being held in contact with the capstan. Connect or replace spring (46A)

2. Motor pulley (131) loose on motor shaft.

3. Idler tension spring (81 or 127) disconnected or broken, thereby not holding idler wheel (110 or 126) in contact with motor pulley (131) and flywheel (124). Connect or replace springs (81 or 127).

4. Take-up belt (123) stretched or not properly connected.

5. Check for oil on motor pulley (131), idler wheels (110 & 126), flywheel (124), and take-up belt (123). If necessary, clean with alcohol. Check for any tape wound around capstan.

No "Fast Forward" (Check "Fast Forward" With Nearly Full Take-Up Reel)

1. Check high speed lever (105) to see if it moves approximately 7/8" to the right. This should allow idler wheel (107) to be pulled by its spring (89) into contact with high speed cup (42) and flywheel (124). A weak spring (89), binding slide (90), or bent arm may prevent this.

2. With tape speed selector in 7 1/2 ips position, flywheel idler slide (85) must be free to slide 7 1/2 ips speed idler wheel (110) into contact with motor pulley (131). Check tension on fast speed idler spring (81).

3. With tape speed selector in 3 3/4 ips position, 3 3/4 ips idler wheel (126) should make contact with motor pulley (131). Check tension on slow speed idler spring (127).

4. Check for oil on drive surfaces. If necessary, clean with alcohol.

5. Pressure pads & pressure roller (53) should be disengaged.

6. Check rewind spindle to see that it rotates freely. Brakes should be disengaged and rubber tire (34) on rewind spindle (33) should not contact motor pulley (131).

No "Rewind", OK In "Play" And "Fast Forward"

1. High speed lever (105) should move approximately 7/8" to the left. Rubber tire (34) on rewind spindle (33) should contact motor pulley (131).

2. Check take-up spindle for free rotation. Brakes should be disengaged, and idler wheel (107) should not be driving high speed cup (42).

3. Rewind arm spring (39) loose or broken. Replace.

Tape Overruns Or Spills When Changing Functions

1. Brake arm spring (17) disconnected or broken. Connect or replace spring (17).

2. Brake roller springs (20 or 27) broken. Replace defective spring.

3. Clutch felt (113) may be worn. Replace.

4. Check for grease or oil on all driving surfaces.

Speed Irregularities (Wow And Flutter)

Check for binding in the following:

1. Flywheel (124) bearings. Check by moving flywheel drive idler wheel (110 or 126), depending on which speed is selected, and fast forward idler wheel (107) away from the flywheel; rotate the capstan by hand. A small drag is normally obtained from belt (123).

2. Pressure roller (53).

3. Check all idler and drive wheel bearings.

4. Check left and right reel spindles. The brakes should be disengaged or held away before turning spindles.

5. Motor bearings. Check by turning shaft by hand.

Check to see that:

1. Supply reel is free to rotate and is not scraping top plate.

2. Rubber tire (34) on rewind spindle (33) touches motor pulley (131) only when in "Rewind" position.

3. Brakes are released.

4. Pressure roller (53) is making good contact with capstan.

5. Capstan is clean.

Check for irregularities:

1. Idler wheel surfaces.

2. Pressure roller (53) surface.

3. Take-up tension. Take-up clutch can be checked by holding right spindle while recorder is in "Play" position. The tension should be smooth without any pulsations. If surface of take-up clutch felt (113) is gummy, it must be replaced.

Insufficient Tape Take-Up

1. Increase take-up by adding another washer (117).

2. Clutch felt (113) may be worn. Replace clutch felt.

Tape Squeak

Tape squeak is caused by faulty tape with insufficient lubrication. Tape squeaking is accentuated by high temperature and humidity. Squeaking can be minimized by:

1. Cleaning head and pressure pads with alcohol.

2. Slightly decreasing pressure pad spring (98 or 99) tension.

Fails To Record

1. Pressure pad spring (98) weak or broken resulting in the pressure pad not holding tape firmly against erase element. Replace spring (98).

2. Pressure pad worn or missing. Replace pressure pad.

3. Check for dirt on erase head element. Clean with alcohol on a soft cloth.

Fails To Erase

1. Pressure pad spring (99) weak or broken resulting in the pressure pad not holding tape firmly against the record element. Replace spring (99).

2. Pressure pad worn or missing. Replace.

3. Check for dirt on record head element. Clean with alcohol on a soft cloth.

Pressure Pads Do Not Disengage In "Stop" Position

1. Check pressure roller (53) arm linkage under sound head shield cup.

Tape Counter Sticks

1. Counter sticking is usually caused by a defective counter (145) and not by slippage of tape counter drive belt (35). Check counter.

Function Knob Does Not Return To "Stop" When High Speed Lever Is Moved Or When Volume Control Is Turned "Off"

1. Check for binding in all linkages connected to the mechanism control shaft. In particular, check for binding in the amplifier function switch (M4). To check this, loosen set screw from function switch cam actuator (157) and slide upward on control shaft (50). Thereafter see if mechanism acts normal. Binding in the amplifier function switch may be caused by the switch shield rubbing against the slide switch. In some cases excessive friction in the function switch can be reduced by lubricating the switch contacts with a non-oxidizing lubricant.

2. If turning the volume control to "off" does not trip the Function Knob to "Stop" position, check to see if the pin at the bottom of the volume control knob is tripping function cam pawl (63).

Function Knob Cannot Be Turned To "Play" Position

1. Spring (66) disconnected or broken. This spring must be connected as shown in Figure 2. If not, the Function Knob cannot be placed in the "Play" position.

Function Knob Will Not Stay In "Play" Or "Record" Position

1. Spring (57A) disconnected or broken. This spring must be connected as shown in Figure 2. If not, the Function Knob will return to "Stop" position when placed in the "Play" or "Record" position.

Faulty Instant Stop

1. While Function Knob is in "Play" position, check that the instant stop brake (18) comes in contact with the rewind spindle tire (34) the instant the pressure roller (53) starts moving away from the capstan. Slight adjustment can be made by bending the instant stop arm linkage to the instant stop spring (24).

AMPLIFIER FUNCTION SWITCH OPERATION (ELECTRICAL)

"Stop" Position

Record-playback-erase head disconnected. Pre-amp, 12AX7(V1), connected to input jack. Tone control is functioning. Driver 6S4(V2) used in Model TR-1200, or 6C4(V2) used in Model T-1100 disconnected. In Model TR-1200 amplifier output is connected to speaker without the insertion of a plug into the input jack. In Model T-1100 insertion of a long plug must be made before amplifier output is connected to the speaker.

"Record Position"

Record-playback head connected to the amplifier output. Pre-amp, 12AX7(V1), connected to input jack. Tone Control is disconnected. Driver 6S4(V2) used in Model TR-1200, or 6C4(V2) used in Model T-1100 connected to operate as a bias-erase oscillator. In Model TR-1200 amplifier output is connected to speaker through a 10 ohm muting resistor with no plug insertion into the input jack necessary. In Model T-1100 insertion of a long plug is necessary before the amplifier output connection is made to the speaker through the 10 ohm muting resistor.

"Play" Position

Record-playback head connected to the pre-amp, 12AX7(V1). Tone control is functioning. Driver 6S4(V2) used in Model TR-1200, or 6C4(V2) used in Model T-1100 connected as a driver between pre-amp 12AX7(V1) and output stage 6V6GT(V3). Amplifier output is connected to speaker.

Weak "Playback" Volume Or No High Frequencies On Known Good Recordings

1. Check for dirty head (94). Clean head with alcohol. (The plastic head covers, front and rear of threading slot, are removed by prying "up").

2. Check pressure pads. See paragraph on "Replacing Pressure Pads", page 12.

3. Wrong type of tape or wind (dull side of tape should be wound "in" — "A" wind).

4. Check head azimuth adjustment, page 12.

5. Head may be worn badly or need replacement (see "Replacing Sound Head", page 12.

Recorder Dead, Pilot Light (M3) Off

1. Check fuse (M1). Cause of blown fuse may be shorted 6X5GT(V4) or unit plugged into D.C. or 220 VAC.

2. Check power transformer (T1) for short or open.

3. Check power cord and "on-off" switch on volume control (R1B).

Dead "Playback", Appears To Operate Properly In "Record" (Record Level Indicator Operating)

1. Check output jack (M7), speaker socket (M8), and speakers (SP1 & SP2).

2. Check for mal-functioning of function switch (M4) contacts.

3. Check for defective head (94). A screwdriver rubbed over the playback element (right element) with volume control set at maximum should produce a sound.

No Monitoring Or P.A. Of Sound When Signal Is Fed Into Input Jack Using Standard Phone Plug (Function Knob In "Stop" For P.A. And In "Record" For Monitoring) Unit Functions Properly On "Playback"

1. Check input jack switch contacts. In Model TR-1200 a long plug inserted in the input jack should short out the input from Radio Tuner Sub-Assembly and simultaneously switch the speaker "on" for P.A. in "Stop" position or for Monitoring in "Record" position. In a like manner, with the exception of shorting out of radio tuner input, speaker is switched "on" in Model T-1100.

No Sound From Radio (Model TR-1200) Function Knob In "Stop" Position (Unit Functions Properly In "Playback")

1. Check to see that there is no plug inserted into the recorder's input jack.

2. Check input jack switch contacts.

3. Check function switch (M4) contacts.

4. Check radio tubes (V5-V7), resistance chart, & operating voltages. (See schematic diagram, page 17).

Weak Or Distorted "Record," "Playback" On Pre-Recorded Tape OK

1. Check bias-erase oscillator coil (L1) secondary for approximately 30 volts @ 35KC. Normal bias current is 1.75 milliamps.

2. Check input jack and function switch (M4) contacts. Normal speech 1 ft. from microphone should flash the "Normal" half of the indicator.

3. Check microphone or other input source. Failure to push plug firmly all the way into jack will cause distortion.

Recording Level Indicator Inoperative, "Records" And "Plays" Properly

1. If indicator (M2) is dead, lamp may be loose or record level indicator circuit defective. Check (C24), (R27), (R28), & (R29).

2. If indicator always glows (C24) may be shorted, (R28) changed value or open, or amplifier may be oscillating.

Records Background Hum, Hum Lower On Pre-Recorded Tape

1. Check all tubes (V1-V3) for heater to cathode leakage; also check (C1) & (C2).

2. Check input shield wiring to see if grounded.

3. Record from another microphone, radio, etc., to see whether hum comes from an outside source.

Hum On "Playback", Falls Off With Decrease In Volume Control

1. Minimize hum as outlined under "Hum Balancing Adjustment" on page 12.

2. Move recorder away from hum fields such as fluorescent lamps, amplifiers, etc.

Microphonic Howl In "Play", But Dies Out When Volume Is Lowered

1. Try different 12AX7(V1) in pre-amplifier stage.

No "Erase," Records Over Previous Recordings

1. Check for dirt on erase head element and check pressure pads.

2. Check bias-erase oscillator coil (L1) as discussed previously under "Weak Or Distorted Record". Check 6S4 or 6C4(V2) bias oscillator-driver.

3. Check erase head coil for open or short.

Excessive Erase, Tape Burns When Remote Control Is Used

1. Adjust bias for .15 volts or less (see page 12 "Bias Adjustment").

No Sound, Neon Bulb Flashes When Playing A Recorded Tape

1. Check function switch (M4) contacts.
2. Check speaker jack switch contact.
3. Check transformer (T2) secondary for open.
4. Check connecting cables, jacks, plugs, etc.

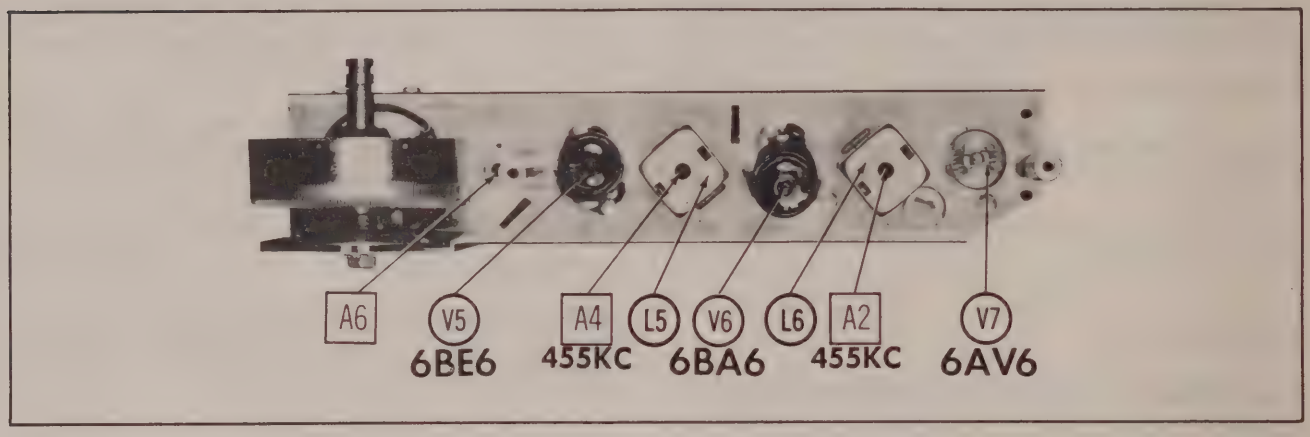


Figure 11. Top View - Radio Tuner.

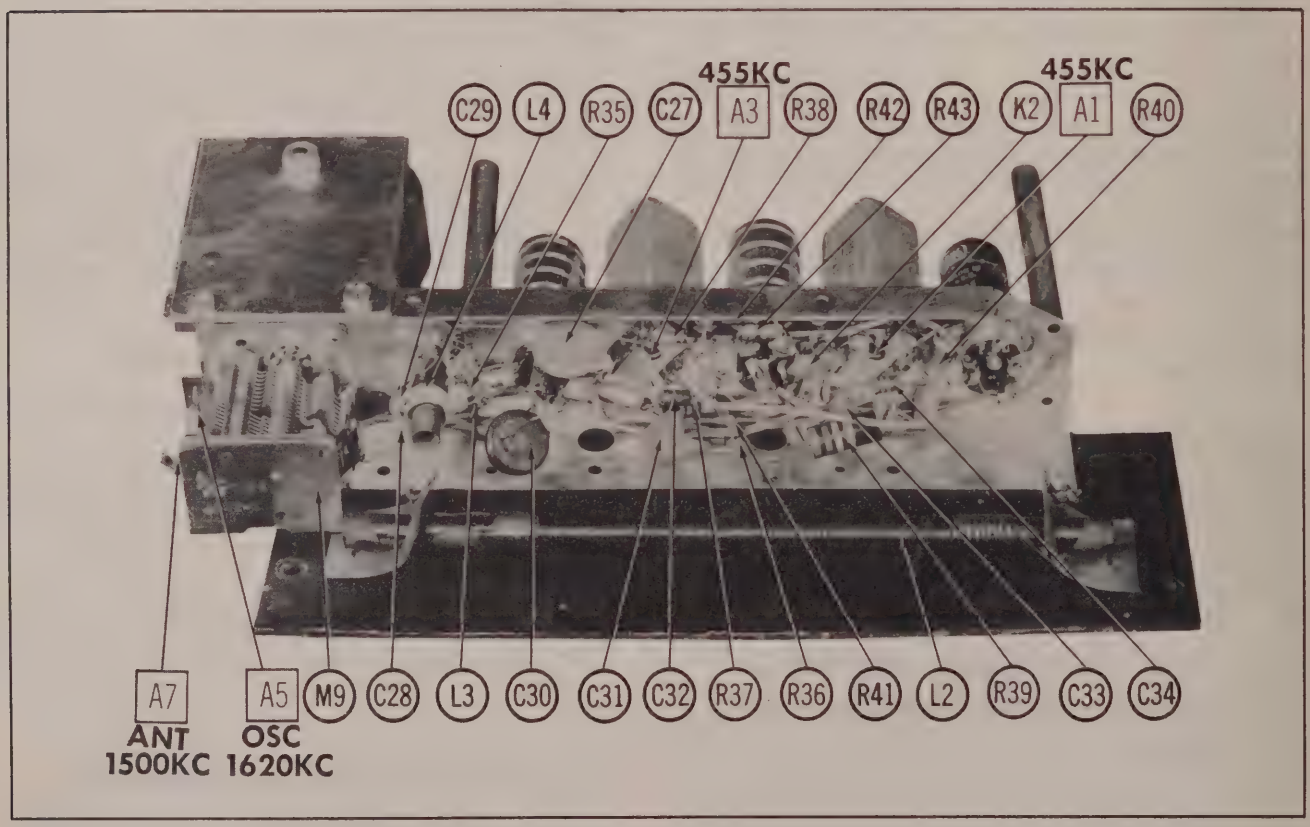


Figure 12. Bottom View - Radio Tuner.

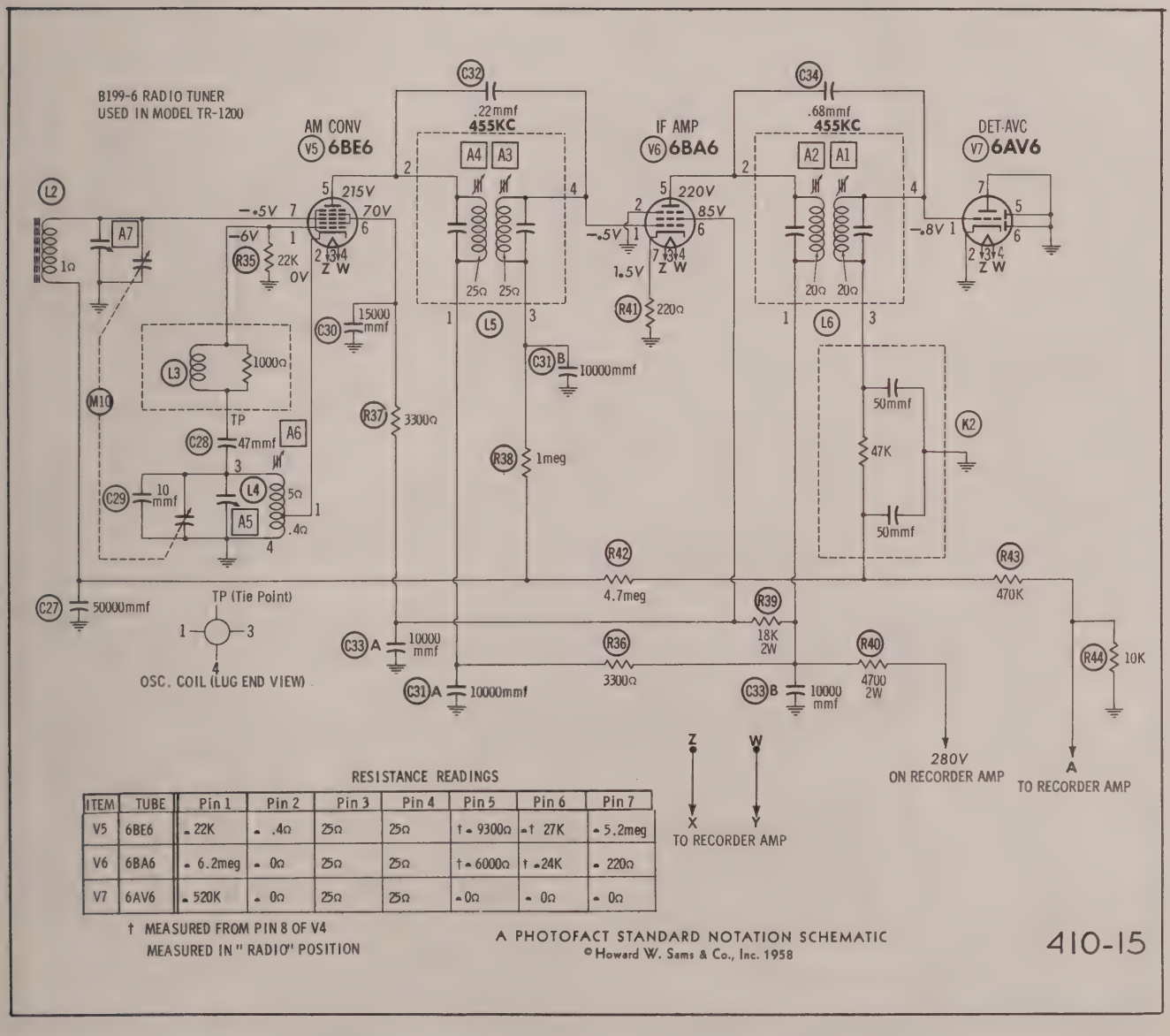
TUNING RANGE—BROADCAST 540-1620KC

Set Function Switch to "Stop" position.
Make certain that no plug is inserted in recorder input jack.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 6BE6 (V5). Low side to chassis.	455KC (400~ Mod.)	Tuning Gang fully open.	Amplifier output	A1, A2. A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	600KC	"	"	A6	"
4.		"	1500KC	Tune to 1500KC signal.	"	A7	" Repeat Steps 2, 3, and 4.

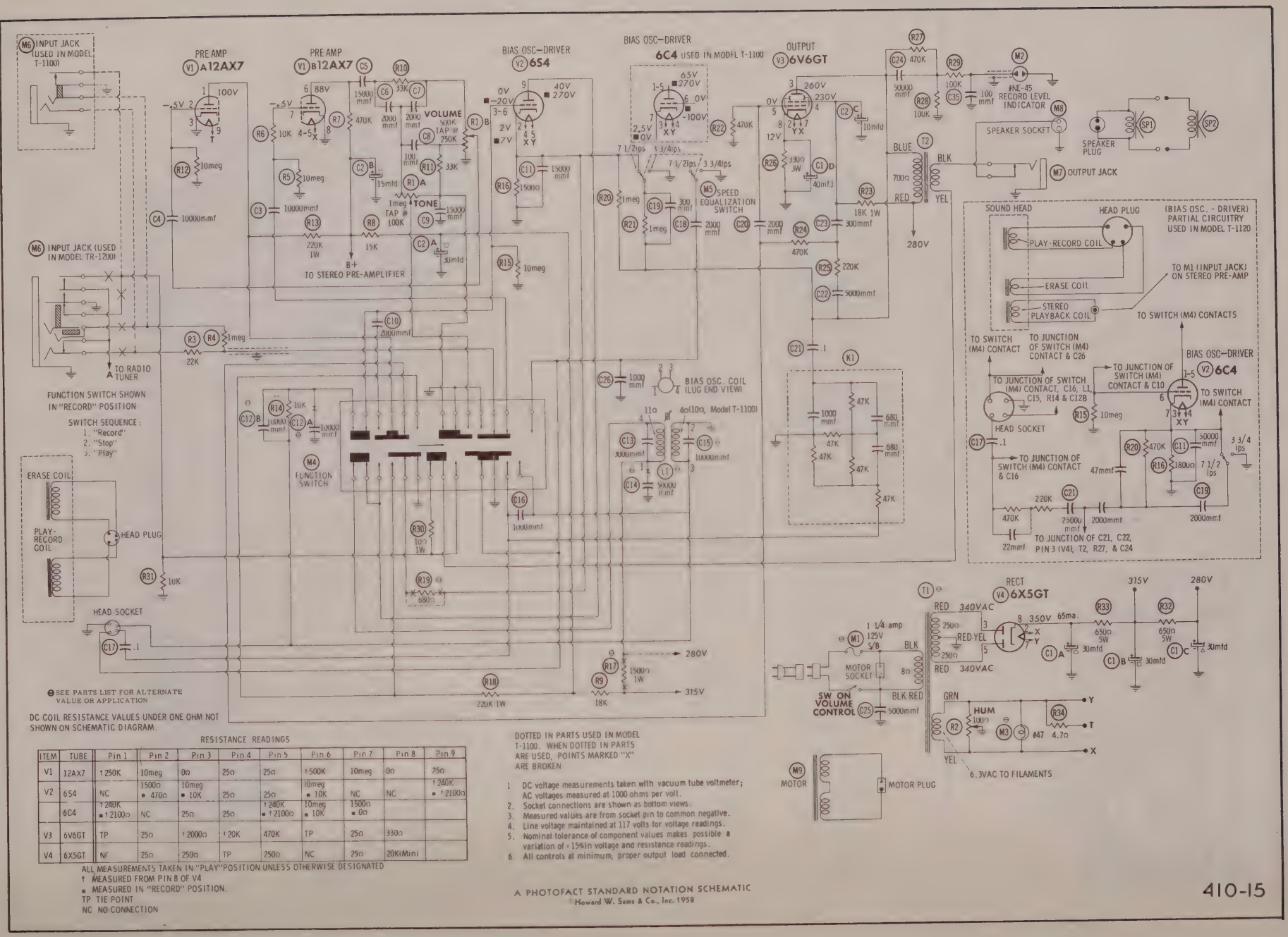
POINTER SETTING

With tuning cap. fully closed, set tuning drum so that the last index mark is opposite the index mark on top plate of recorder.



ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V5	6BE6	≈ 22K	≈ .4Ω	25Ω	25Ω	†≈ 9300Ω	≈† 27K	≈ 5.2meg
V6	6BA6	≈ 6.2meg	≈ 0Ω	25Ω	25Ω	†≈ 6000Ω	†≈24K	≈ 220Ω
V7	6AV6	≈ 520K	≈ 0Ω	25Ω	25Ω	≈0Ω	≈ 0Ω	≈ 0Ω

Figure 13. Schematic - Radio Tuner.


M6 INPUT JACK (USED IN MODEL T-1100)
PRE AMP V1A 12AX7
PRE AMP V1B 12AX7
BIAS OSC–DRIVER V2 6S4
BIAS OSC–DRIVER 6C4 USED IN MODEL T-1100
OUTPUT V3 6V6GT
VOLUME 500K TAP @ 250K
TONE 1meg TAP @ 100K
M5 SPEED EQUALIZATION SWITCH
M2 #NE-45 RECORD LEVEL INDICATOR
M8 SPEAKER SOCKET
SP1 SPEAKER PLUG
SP2
M7 OUTPUT JACK
M6 INPUT JACK (USED IN MODEL TR-1200)
TO RADIO A TUNER
B+ TO STEREO PRE-AMPLIFIER
FUNCTION SWITCH SHOWN IN "RECORD" POSITION
SWITCH SEQUENCE: 1. "Record" 2. "Stop" 3. "Play"
M4 FUNCTION SWITCH
BIAS OSC. COIL (LUG END VIEW)
ERASE COIL
PLAY-RECORD COIL
HEAD PLUG
HEAD SOCKET
SOUND HEAD
PLAY-RECORD COIL
ERASE COIL
STEREO PLAYBACK COIL
TO M1 (INPUT JACK) ON STEREO PRE-AMP
TO SWITCH (M4) CONTACTS
TO SWITCH (M4) CONTACT
TO JUNCTION OF SWITCH (M4) CONTACT & C26
TO JUNCTION OF SWITCH (M4) CONTACT & C10
TO JUNCTION OF SWITCH (M4) CONTACT, C16, L1, C15, R14 & C12B
TO JUNCTION OF SWITCH (M4) CONTACT & C16
TO JUNCTION OF C21, C22, PIN 3 (V4), T2, R27, & C24
(BIAS OSC. - DRIVER) PARTIAL CIRCUITRY USED IN MODEL T-1120
BIAS OSC–DRIVER V2 6C4
T1
RECT V4 6X5GT
RED 340VAC
RED YEL
RED 340VAC
315V
280V
650Ω 5W
M1 1 1/4 amp 125V S/B
MOTOR SOCKET
SW ON VOLUME CONTROL
BLK
BLK RED
GRN
YEL
HUM
M3 #47 4.7Ω
6.3VAC TO FILAMENTS
M9 MOTOR
MOTOR PLUG
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†250K	10meg	0Ω	25Ω	25Ω	†500K	10meg	0Ω	25Ω
V2	6S4	NC	1500Ω ▪ 470Ω	10meg ▪ 10K	25Ω	25Ω	10meg ▪ 10K	NC	NC	†240K ▪ †2100Ω
	6C4	†240K ▪ †2100Ω	NC	25Ω	25Ω	†240K ▪ †2100Ω	10meg ▪ 10K	1500Ω ▪ 0Ω		
V3	6V6GT	TP	25Ω	†2000Ω	†20K	470K	TP	25Ω	330Ω	
V4	6X5GT	NC	25Ω	250Ω	TP	250Ω	NC	25Ω	20K(Mini	

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM PIN 8 OF V4
▪ MEASURED IN "RECORD" POSITION.
TP TIE POINT
NC NO CONNECTION

DOTTED IN PARTS USED IN MODEL T-1100. WHEN DOTTED IN PARTS ARE USED, POINTS MARKED "X" ARE BROKEN

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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410-15

Figure 14. Schematic - Recorder Amplifier.

AMP PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	12AX7	
V2	Bias Oscillator	6S4A	
V3	Output	6V6GT	
V4	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA REVERE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲30	450	A119-2	AFH4-77	D0560	FP436	TMQ-96	Q-400	R2690*
B	■30	400			BR1645	TCD72	TD-16-450	MT-4516	
C	▲30	350							
D	40	25							
C2A	■30	350	A119-1	AFH3-28-30	C0225	FP330.7	TMT-28	T-106	TVL-3639.8
B	▲15	350					TD-10-450	MT-3516	
C	10	300							

*Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA REVERE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	10000		B114-1	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C4	10000		B114-1	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C5	15000		B114-2	BPD-015	DD16-153	BYA10S15		5HK-S15	
C6	2000		B113-2	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C7	2000		B113-2	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C8	100		B112-1	SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C9	15000		B114-2	BPD-015	DD16-153	BYA10S15		5HK-S15	
C10	2000		B113-2	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C11	15000		B114-2	BPD-015	DD16-153	BYA10D15		5HK-S15	
C12A	10000		B114-9	BPD-2X01	DD-103	BYD6DS1	DC511	5HK-2S1	Note 1
B	10000				DD-103		DC511		Note 1
C13	3000		B113-5	1467-003	DD-302	1W5D3	MC461	1FM23	
C14	50000		B114-11	BPD-05	DF-503			5HK-S5	Note 2
C15	10000		B114-1	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	Note 3
C16	1000		B113-1	SI 1000	D6-102	LT6D1	UC-521	5HK-D1	
C17	.1	200	B115-1	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C18	2000		B113-2	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C19	300		B112-4	DI-0003	DD-301	L10T3	UC-533	5GA-T3	
C20	2000		B113-2	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C21	.1	600	B115-2	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C22	5000		B113-8	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C23	300		B112-4	DI-0003	DD-301	L10T3	UC-533	5GA-T3	
C24	50000		B114-11	BPD-05	DF-503			5HK-S5	
C25	5000		B113-8	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C26	1000		B113-1	SI 1000	D6-102	LT6D1	UC-521	5HK-D1	

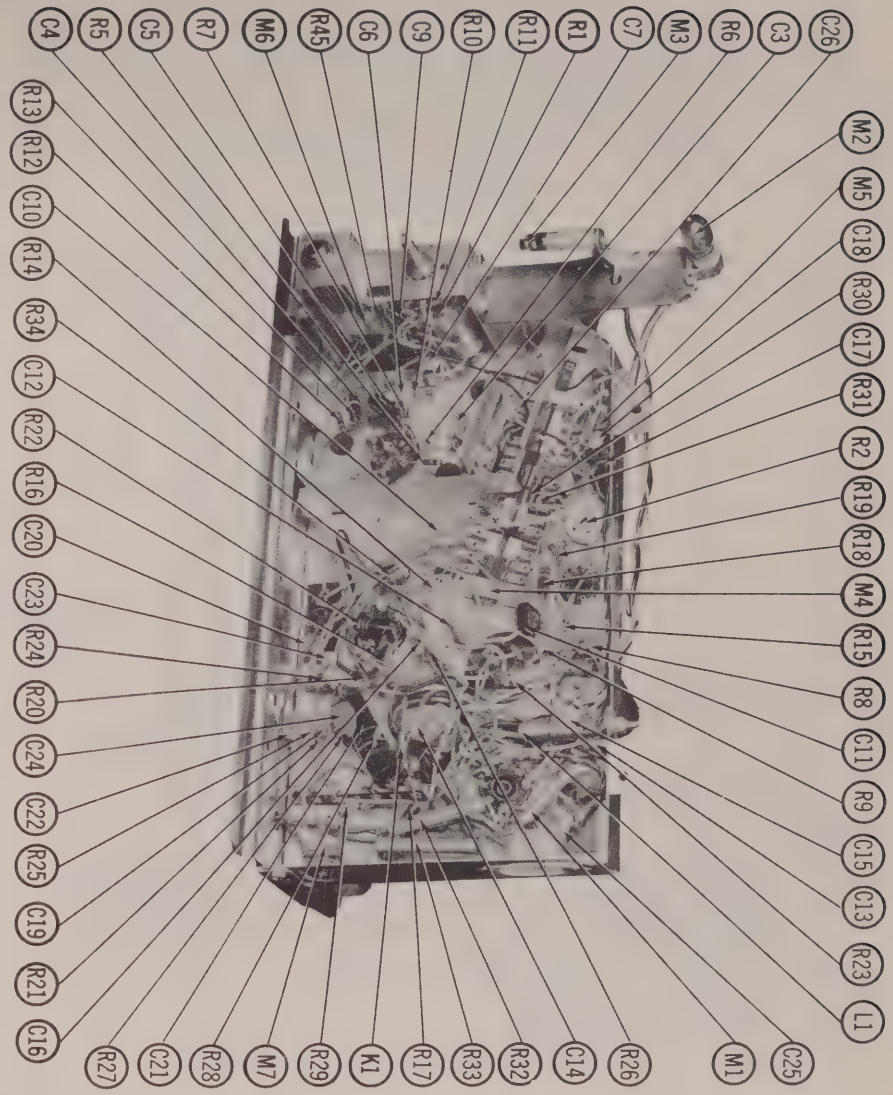
Note 1. In Model T-1100 C12A is not used and C12B is 1000mmf (Part #B113-1)
Note 2. Used only in Model TR-1200
Note 3. In Model T-1100 2000mmf is used in this application (Part # B113-2)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA REVERE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	B140-2				■ UE3836S	Tone, Tap ⓐ 100K
B	500K	½						Volume, Tap ⓐ 250K
C	Switch							
R2	100Ω	2(WW)	A140-1					Hum Balance

■ "STA-LOC" Equivalent: FB16T15, OS875, IS1250, US41

CHASSIS—TOP VIEW



AMP PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REVERE PART No.	NOTES
R3	22K		B103-7	
R4	1meg		B105-1	
R5	10meg		B105-5	
R6	10K		B103-2	
R7	470K		B104-10	
R8	15K		B103-4	
R9	18K		B103-5	
R10	33K		B103-8	
R11	33K		B103-8	
R12	10meg		B105-5	
R13	220K	1	B104-6	
R14	10K		B103-2	Note 1.
R15	10meg		B105-5	
R16	1500Ω		B102-9	
R17	1500Ω	1	B102-4	Note 2.
R18	220K	1	B104-6	
R19	680Ω		B101-7	Note 2.
R20	1meg		B105-1	
R21	1meg		B105-1	
R22	470K		B104-10	
R23	18K	1	B103-6	
R24	470K		B104-10	
R25	220K		B104-5	
R26	330Ω	3	A106-8	
R27	470K		B104-10	
R28	100K		B104-1	
R29	100K		B104-1	
R30	10Ω	1	B100-2	
R31	10K		B103-2	
R32	650Ω	5	A106-9	
R33	650Ω	5	A106-9	
R34	4.7Ω	(WW)	B100-1	

Note 1. Model T-1100 use 22K in this application (Part # B103-7)
Note 2. Not used in Model T-1100 or T-1120

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA REVERE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ.56A	640VCT ⓐ.070A	6.3V ⓐ2.8A	B130-3 ①	P9306②	P-3151②		PC8408②	22R02③	R-9A ②

①Part # B130-1 used in Models T-1100 and T-1120
②Drill New Mounting Holes
③Use Original Shields.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA REVERE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7500Ω	3-4Ω	A-131-1	Z1115 ①	A-3020	AU-600	A-3878①	26S48	S-9Z	①Drill New Mounting Hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA REVERE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5 1/4"	PM	3-4Ω	C-160-1C	52A21Z8.3	
SP2	5 1/4"	PM	3-4Ω	C-160-2	52A21Z8.3	

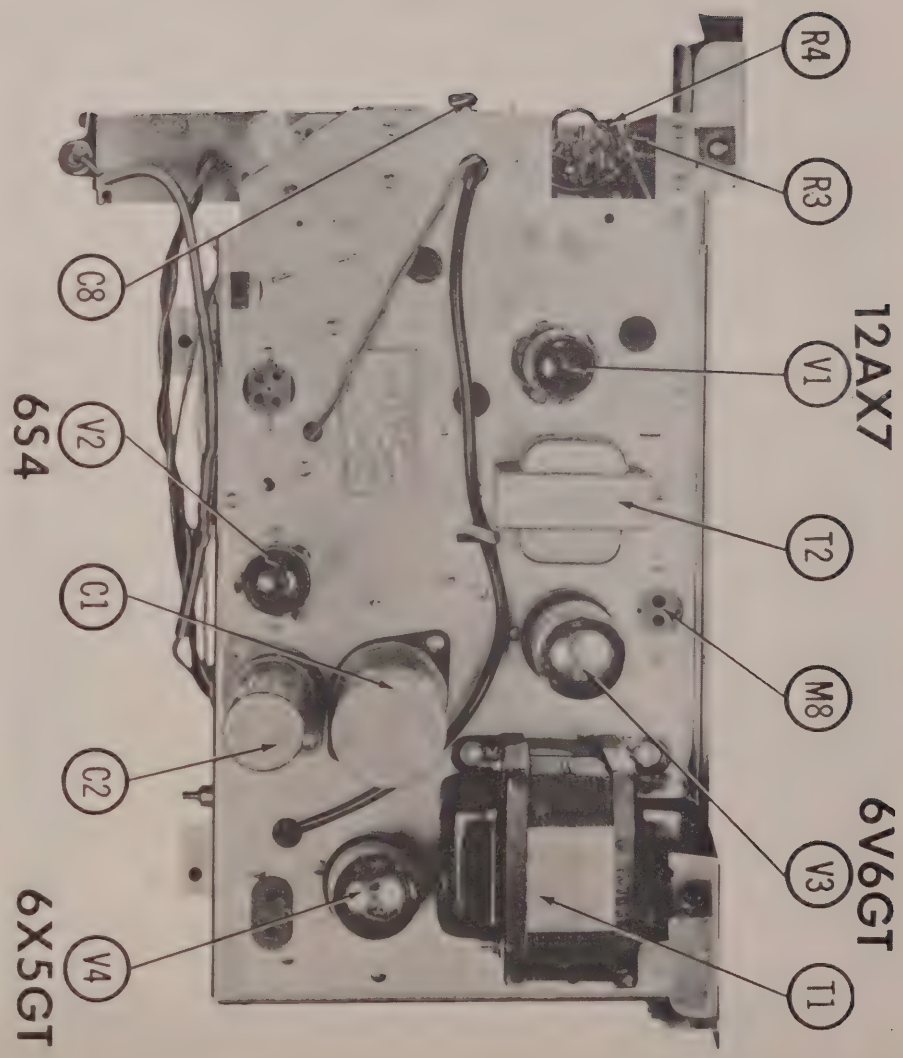
COIL

ITEM No.	USE	REPLACEMENT DATA REVERE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.	A132-8					Model TR-1200
	Bias Osc.	A132-1					Model T-1100

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	REVERE PART No.	REPLACEMENT DATA
K1	Tone Compensation	1000mmf, 680mmf, 680mmf 47K, 47K, 47K, 47K, 47K	A177-2	

CHASSIS—BOTTOM VIEW



AMP PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			REVERE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1 1/4A 125V S/B	A176-1①		3151.25 (1 1/4A 125V S/B)		MDV 1 1/4	

①Some versions may use 1 6/10A (Part #A176-2)

MISCELLANEOUS

ITEM No.	PART NAME	REVERE PART No.	NOTES
M2	Lamp	A121-2	Record Level Indicator, NE-45, Neon Type
M3	Lamp	A121-5	Pilot Light, #47 (Alternate Type #1847)
M4	Switch	A141-1	Function, Slide Type
M5	Switch	A141-8	Speed Equalization, DPDT, Slide Type
M6	Jack	A174-17	Input, Model TR-1200
	Jack	A174-1	Input, Model T-1100
M7	Jack	A174-5	Extension Spkr.
M8	Speaker Socket	A174-2	
M9	Motor		

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	B15-11156	High Speed
Knob	A2-12399	Two Speed Control
Knob	A1-12360	On-Off-Volume
Knob	B15-11155	Tone
Knob	A1-12361	Function
Knob	B15-11157	Counter Reset
Button	A4-11060	Record Lock, Release

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V5	AM Converter	6BE6	
V6	IF Amplifier	6BA6	

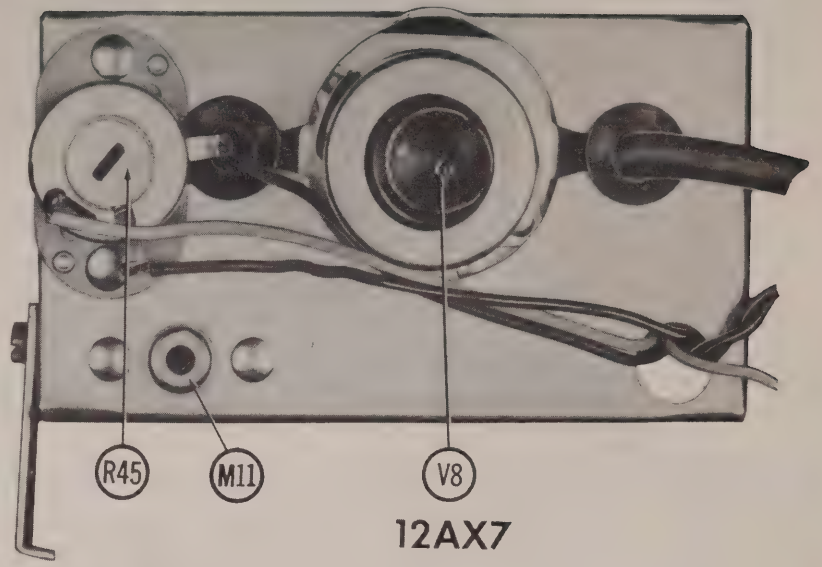
ITEM No.	USE	TYPE	NOTES
V7	Detector-AVC	6AV6	

FIXED CAPACITORS

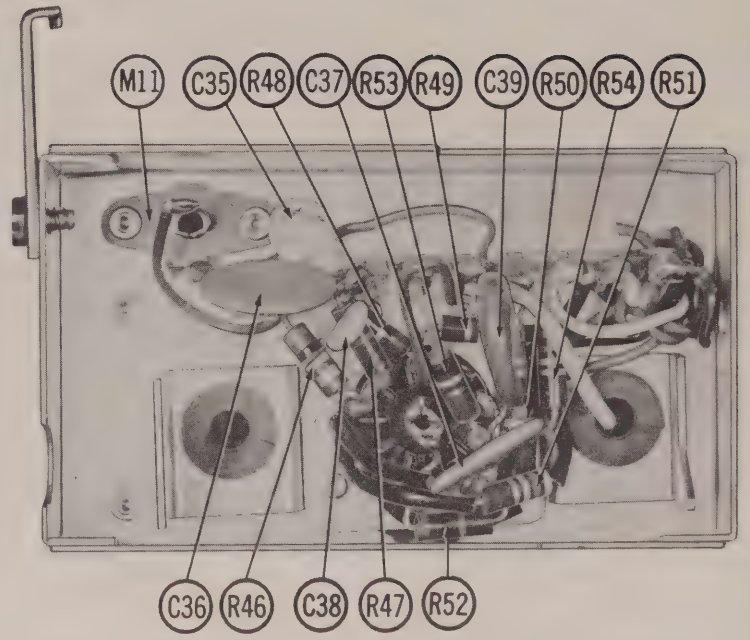
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	REVERE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C27	50000		B114-11	BPD-05	DF-503			5HK-S5	
C28	47		B111-2	NP0-D147	DD-470	L10Q47		5TCC-Q47	10%
C29	10		B111-3	N750-D110	DTN-10	C10Q1U	NT-541	5TCU-Q1	N750 10%
C30	15000		B114-2	BPD-015	DD16-153			5HK-S15	
C31A	10000		B114-9	BPD-2X01	DD-103	BYD6DS1	DC511	5HK-2S1	
B	10000				DD-103		DC511		
C32	.22		B110-2						
C33A	10000		B114-9	BPD-2X01	DD-103	BYD6DS1	DC511	5HK-2S1	
B	10000				DD-103		DC511		
C34	.68		B110-3		TCZ-R68				

STEREO CHASSIS



12AX7



TUNER PARTS LIST AND DESCRIPTIONS (continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REVERE PART No.	NOTES
R35	22K		B103-7	
R36	3300Ω		B102-10	
R37	3300Ω		B102-10	
R38	1meg		B105-1	
R39	18K	2	B103-13	
R40	4700Ω	2	B102-11	
R41	220Ω		B101-2	
R42	4.7meg		B105-3	
R43	470K		B104-9	
R44	10K		B103-2	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA REVERE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L2	Loop Stick	C133-3					Wound on 1000Ω Resistor * Disregard primary
L3	Parasitic Choke	A133-4					
L4	Osc. Coil	A132-9			70-Osc*		
L5	Input IF	A132-4	16-6758	BC-352	12-C1	RF-1	
L6	Output IF	A132-5	16-6758	BC-353	12-C2	RF-2	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	REVERE PART No.	REPLACEMENT DATA	
K2	Diode RF Filter	50mmf, 50mmf, 47K	A177-5	Aerovox Centralab Cornell-Dubilier Sprague	PA-99 PC-52 111TM3 D-3

MISCELLANEOUS

ITEM No.	PART NAME	REVERE PART No.	NOTES
M10	Tuning Cap.	A142-1	2 Gang, (Ant. 23-220mmf, Osc. 14-132mmf)

STEREO PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V8	Preamplifier	12AX7	

ITEM No.	USE	TYPE	NOTES

STEREO PARTS LIST AND DESCRIPTIONS (continued)

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA REVERE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C35	100		B112-1	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C36	25000		B114-10					TG-S25	
C37	10000		B114-1	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C38	470		B112-5	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C39	50000		B114-11	BPD-05	DF-503			5HK-S5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA REVERE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R45	250Ω	2(WW)	A140-13					Hum Balance

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REVERE PART No.	NOTES
R46	10K		B103-2	
R47	10meg		B105-5	
R48	10Ω		B100-5	
R49	270K		B104-16	
R50	4.7Ω	1	B100-1	
R51	470K		B104-8	
R52	10meg		B105-5	
R53	120K		B104-3	
R54	68K		B103-11	

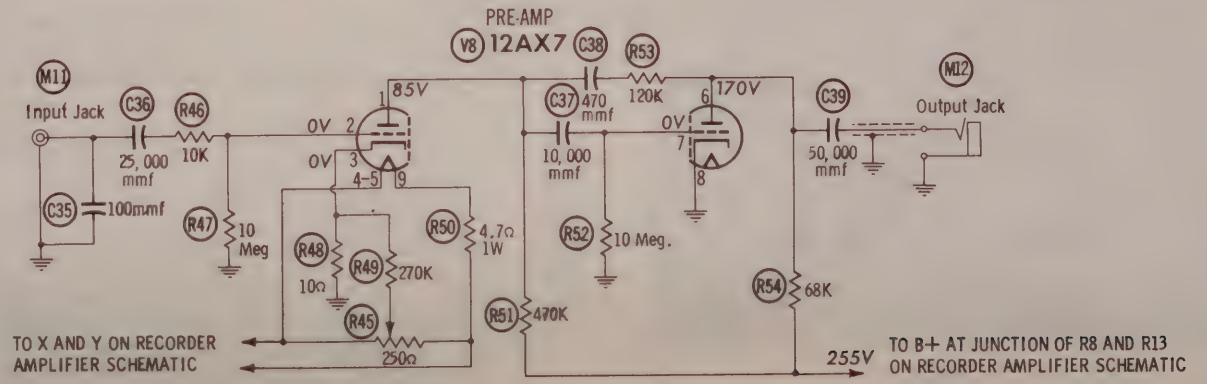
MISCELLANEOUS

ITEM No.	PART NAME	REVERE PART No.	NOTES
M11	Jack	A174-8	Input
M12	Jack	A174-25	Output

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

Pin No.	12AX7 V8
1	500K
2	10meg
3	10Ω
4	25Ω
5	25Ω
6	†100K
7	10meg
8	0Ω
9	25Ω



Ref. No.	Part No.	Description
	C1-12358	Top Plate Assembly; Consists Of:
1	R-311017	Top Stamped Cover
2	A1-12370	Top Plastic & Name Plate Ass'y.
3	A1-12362	Rear Head Cover
4	C15-11152	Small Cleanout Cover
5	TR-7251	Pan Head Screw, #6-32 x 7/32
6	TR-7251	Pan Head Screw, #6-32 x 7/32
7	A4-11073	Screw, Top Plate
8	A9-11136	Wood Screw, Top Plate
9	B15-11156	Knob, High Speed
10	TR-7427	#4-40 Screw (Fillister Head)
11	A2-12399	Knob, Two Speed Control
12	A1-12360	Knob, On-Off-Volume Control
13	B15-11155	Knob, Tone Control
14	A12-11178	Nameplate, On-Off-Volume Control
15	A1-12361	Knob, Function
16	A9-12315	Grip Ring, 1/4" Shaft
17	A13-14111	Brake Arm Spring
18	A1-14095	Left Brake Arm Assembly
19	A15-14064	Nylon Brake Roller
20	A13-14077	Brake Roller Leaf Spring
21	A13-14076	Brake Hold Lever Spring
22	A4-14074	Brake Arm Spacer
23	TR-7513	Flat Washer
24	A13-14075	Instant Stop Spring
25	A1-14096	Right Brake Arm Assembly
26	A15-14064	Nylon Brake Roller
27	A13-14077	Brake Roller Leaf Spring
28	A4-14074	Brake Arm Spacer
29	TR-7513	Flat Washer
30	TR-7933	Rear Cam Slide Assembly
31	A15-14087	Spindle Cap
32	A8-14400	Washer, Karapack
33	A1-14097	Rewind Spindle Assembly
34	A30-11094	Spindle Tire
35	A30-11101	Counter Drive Belt
36	TR-7504	Washer, Fibre
37	TR-7517	Washer, Phenol
38	A1-14519	Rewind Spindle Arm Group
39	TR-7604	Spring, Rewind Arm
40	A15-14087	Spindle Cap
42	A1-14516	Spindle Cup & High Speed Drum Ass'y.
43	A30-11094	Spindle Tire
44	TR-7418	Screw, #8-32 (Hex Head)
45	A9-11888	"E" Ring, 3/16" Shaft
46	TR-7117	Spring Arm
46A	TR-7601	Pressure Roller Spring
47	A13-11205	Spring, Toggle Arm
48	C1-11197	Upper Mechanism Plate Assembly
48A	A13-12416	Detent Spring
49	TR-7525	"E" Ring, 5/16" Shaft
50	A4-11061	Function Shaft
50A	TR-7507	Washer, Fibre
51	TR-7521	"E" Ring, 5/32 Shaft
52	TR-7517	Washer, Fibre
53	A30-14068	Pressure Roller Ass'y.
54	TR-7418	Screw, #8-32 (Hex Head)
55	TR-7418	Screw, #8-32 (Hex Head)
56	A4-11060	Record Lock Release Button
56A	A9-11110	Roll Pin, Record Lock
57	A3-11003	Function Shaft Bracket
57A	A13-14127	Pawl Spring
58	TR-7507	Washer, Fibre
59	TR-7525	"E" Ring, 5/16" Shaft
60	A3-11010	Record Lock Pawl
61	TR-2614	Record Lock Spring
62	A14-14127	Spring, Function Cam Lock
63	B3-11008	Function Cam Pawl
64	B3-11009	Function Cam Lock
65	A3-11005	High Speed Trip Lever
66	A13-11200	Spring, High Speed Trip Lever
67	A1-14081	Instant Stop Arm
68	TR-7445	Screw, #8-32 (Truss Head)
69	TR-2631	Washer, Steel
70	TR-7267	Instant Stop Arm Bushing
71	A9-11888	"E" Ring, 3/16" Shaft
72	TR-7505	Washer, Fibre
73	A3-11002	Cam Arm Drive
74	TR-7524	"E" Ring, 1/4" Shaft
75	A1-12369	Function Arm Assembly
76	TR-7445	Screw, #8-32 (Truss Head)
77	A3-12375	7 1/2 ips Idler Actuating Cam
78	A4-11229	Link Spacer
79	A1-12353	Function Cam Assembly
80	TR-7507	Washer, Fibre
81	TR-7605	Idler Drive Spring
82	A9-10960	Speed Nut
83	A9-11888	"E" Ring, 3/16" Shaft
84	TR-7517	Washer, Phenol
85	B1-14506	Flywheel Idler & Slide Assembly
86	A9-11888	"E" Ring, 3/16" Shaft
87	TR-7517	Washer, Phenol
88	A9-10960	Speed Nut
89	TR-7616	Rapid Forward Idler Spring
90	B1-14509	Idler Slide Group, Rapid Forward
91	TR-7425	Screw, #4-40 (Binding Head) Used in early versions of Model T-1100.
	A-14-1057	Screw, #3-48 x 1/8" (Used in later versions of Model T-1100 & all versions of Model T-1120)
92	TR-7150	Head Spring Retainer (Used in early versions of Model T-1100)
	A-13-14320	Head Spring Retainer (Used in later versions of Model T-1100 & all versions of Model T-1120)
93	TR-7249	Head Spring Retainer Insulating Stud (Used in early versions of Model T-1100)
	A-4-14360	Head Spring Retainer Insulating Stud (Used in later versions of Model T-1100)
	A-9-14565	Head Spring Retainer Insulating Stud (Used in Model T-1120)
94	C-161-1	Play-Record-Erase Head (Used in all versions of Model T-1100)
	C-161-4	In-Line Stacked Head (Used in Model T-1120)
95	TR-7520	"E" Ring, 1/8" Shaft
96	TR-7916	Erase Pressure Pad Assembly
97	A-1-14218	Record Pressure Pad Assembly
98	TR-7615	Erase Pad Spring
99	TR-7610	Record Pad Spring
100	TR-7429	Head Alignment Screw
101	TR-7136	Head Aligning Plate

MECHANICAL PARTS LIST (Cont.)

Ref. No.	Part No.	Description
102	TR-7922	Pressure Roller Arm Assembly
103	A13-11203	Pressure Roller Arm Spring
104	TR-7931	High Speed Forward Idler Arm Ass'y.
105	A1-12363	High Speed Slide Arm Assembly
106	P-1428	Washer, Steel
107	B1-14135	High Speed Idler Assembly
108	TR-7524	"E" Ring, 1/4" Shaft
109	P-1428	Washer, Steel
110	A1-12424	Flywheel Idler (7 1/2 ips)
111	TR-7524	"E" Ring, 1/4" Shaft
112	TR-7517	Washer, Fibre
113	TR-7817	Take-Up Clutch Felt
114	TR-7110	Clutch Plate
115	A1-14515	Take-Up Pulley Assembly
116	TR-7520	"E" Ring, 1/8" Shaft
117	TR-7514	Flat Washer, Steel
118	TR-7115	Take-Up Clutch Lever
119	A9-11888	"E" Ring, 3/16" Shaft
120	TR-7607	Spring
121	TR-7912	Toggle Arm Assembly
122	A9-11888	"E" Ring, 3/16" Shaft
123	TR-7809	Take-Up Belt
124	A1-12423	Capstan & Flywheel Assembly
125	TR-2431	Ball Bearing (Flywheel)
126	A1-12424	Flywheel Idler (3 3/4 ips)
126A	TR-7505	Washer, Fibre
127	TR-7616	3 3/4 ips Idler Spring
128	A3-12379	3 3/4 ips Idler Slide
129	TR-7517	Washer, Fibre
130	A9-11888	"E" Ring, 3/16" Shaft
131	A4-12393	Motor Pulley
132	A9-11888	"E" Ring, 3/16" Shaft
133	TR-7504	Washer, Fibre
134	A15-14000	Tape Counter Worm Gear
135	TR-7504	Washer Fibre

Ref. No.	Part No.	Description
136	P-1329	"E" Ring, 3/8" Shaft
137	A13-14481	Compression Spring
138	TR-7504	Washer, Phenol
139	A8-14004	Flat Washer, Nylon
140	TR-7506	Washer, Fibre
141	B3-11196	Slide Cam Connector Arm
142	TR-7507	Washer, Fibre
143	TR-7419	.Screw, #8-32 (Sems Truss Head)
144	TR-7445	Screw, #8-32 (Truss Head)
145	R9-11100	Tape Counter
146	B15-11157	Counter Reset Knob
147	A9-10289	Crescent Retaining Ring
148	A3-11011	Switch Actuating Arm
149	A4-12385	Speed Control Shaft
150	A15-12406	Cam Roller Guide
151	A3-11011	Switch Actuating Arm
151A	A3-12415	Switch Actuating Arm
152	TR-7517	Washer, Fibre
153	A9-11159	Spring Washer
154	A9-11888	"E" Ring, 3/16" Shaft
155	A3-12381	Amplifier Speed Change Switch Arm
156	TR-7419	Screw, #8-32 (Sems Truss Head)
157	A3-11011	Function Switch Actuating Arm
158	A9-11108	Roll Pin, 1/8" x 1"
159	A17-11129	Set Screw, 10-32 x 1/4"
160	A13-11203	Detent Spring
161	A9-11888	"E" Ring, 3/16" Shaft
162	A9-11184	Hex Nut (Keps)
163	C1-10083	Motor, 110V, 60 Cycles.
164	B3-11056	Motor Fan
165	C-1-11206	Lower Mechanism Plate Sub-Assembly
166	A8-10472	Flywheel Thrust Washer
167	A15-1400	Odometer Worm Gear
168	A15-12392	Slide Guide

AUXILIARY PARTS LIST

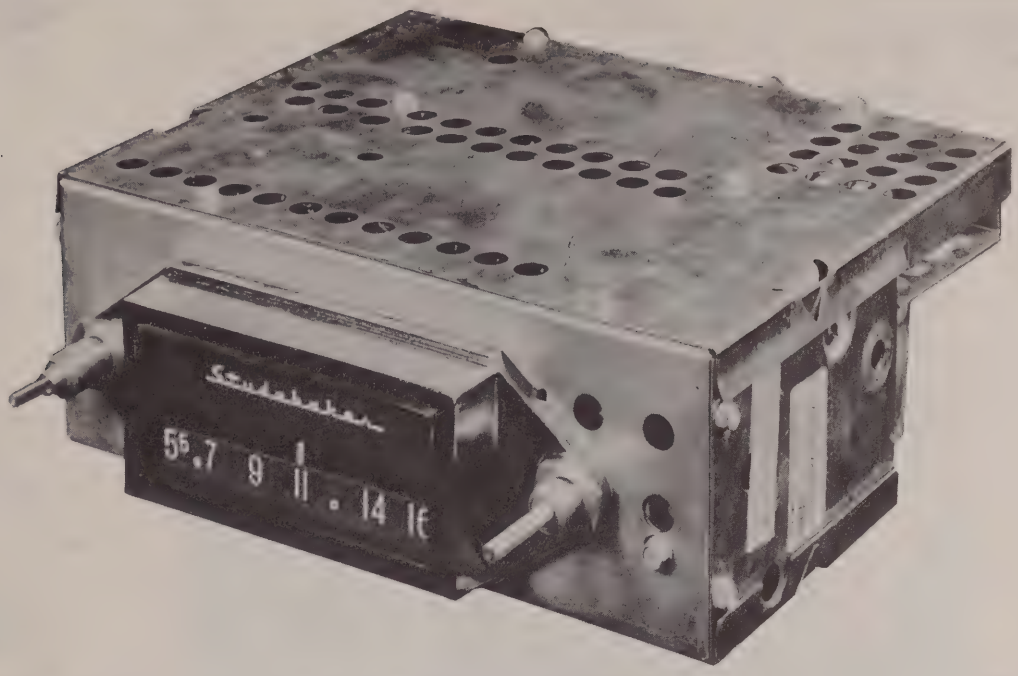
Part No.	Description
A196-10	Hi-Fi Connecting Cable
A196-1	Attachment Cord
TRA-1256	Microphone P.A. Extension Cord (Three Circuit Plug)
A196-2	Regular Microphone Extension Cord
TE-401	Ear Phone
TF-902	Foot Control
A162-2	Microphone Assembly
TR-2601	Spare Pressure Pads

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

STUDEBAKER-PACKARD MODEL AC-2905

STUDEBAKER-PACKARD
MODEL AC-2905



TRADE NAME	Studebaker Model AC-2905 (For 1958 Studebaker Automobiles)
MANUFACTURER	Delco Radio Div., G.M. Corp., Kokomo, Indiana.
TYPE SET	Battery Operated Custom Built AM Automobile Receiver
TUBES (Six)	Types 12BA6 RF Amplifier, 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 12V6GT Output, OZ4 Rectifier
POWER SUPPLY	12 Volt Storage Battery — RATING 2.2 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

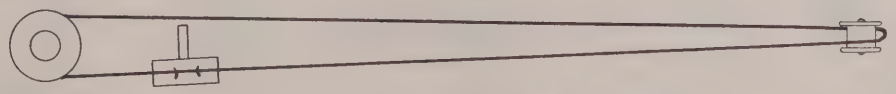
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set tone control to treble.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to Pin 7 (grid) of 12BE6 (V2). Low side to chassis.	262KC (400~ Mod.)	High frequency stop.	Across Voice Coil	A1, A2, A3 A4	Adjust for maximum output.
	Check setting of Osc. Coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
2.	68mmf	High side to Ant. connector. Low side to chassis.	1615KC	High frequency stop.	Across Voice Coil	A6, A7, A8	Adjust for maximum output.
3.	"	"	600KC	Tune for 600KC signal.	"	A9, A10	"
4.	"	"	1615KC	High frequency stop.	"	A7, A8	"
5.	With radio installed in car, adjust A8 for maximum output.						

POINTER ADJUSTMENT

With radio tuned to a 1100KC signal, move pointer on dial cord so that pointer coincides with 1100KC mark on dial.

TUNING SHAFT
8 Turns



SLUGS ALL WAY OUT
(Low Freq. End of Dial)

DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H589

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SET 410 FOLDER 16

PARTS LIST AND DESCRIPTIONS

STUDEBAKER
MODEL AC-2905

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6	
V2	Converter	12BE6	
V3	IF Amplifier	12BA6	

ITEM No.	USE	TYPE	NOTES
V4	Det. -AVC-AF Amp.	12AV6	
V5	Output	12V6GT	
V6	Rectifier	OZ4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■20	400	6309	AFH2-51	B0400	FP234	TMD-50	D-215	TVL-2755
B	▲20	400							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2A	5-50								
B	32		7270434						
C3	.047	100	6612	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C4	15		6361	NP0-DI 15	DTZ-15	C10Q15C		5TCC-Q15	10% NP0
C5A									
B									
C			7268828						
D									
C6	39		6366	DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	
C7	200		7270129	1469-0002		22R5T2	MCE237	MS-32	5%
C8	.047	400	6612	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C9	2000		6352	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C10	.01	200	6610	P288N-01	D6-103	CUB2S1	GEM-411	2TM-S1	
C11	.047	400	6612	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C12	1000		6350	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C13	.006	800	6566	P1088N-006	DD16-602	CUB16D6	GEM-1626	MB-D6	
C14	.007	1600	6567	P1688N-007	DD16-702	CUB16D7	GEM-1627	MB-D7	
C15	.47	100	6692	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C16	.1	200	6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C17			7271769						

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	7271808					Tone
B	300K							Volume
C	Switch							

RESISTORS

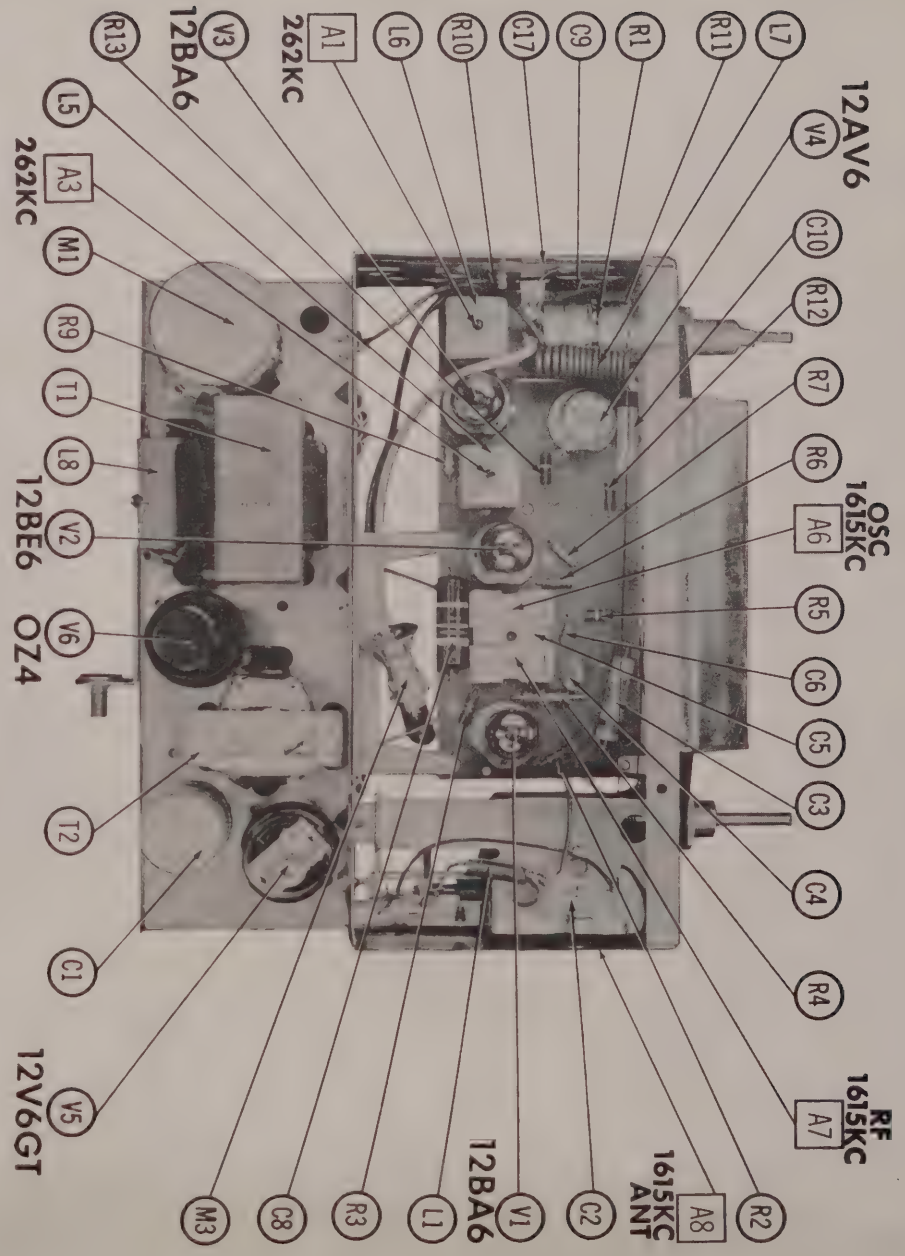
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R2	2.2meg		1239	
R3	150Ω		1115	
R4	10K		1174	
R5	330K		1229	
R6	100Ω		1113	
R7	22K		1215	
R8	15K	1	1253	
R9	330Ω		1119	

ITEM No.	RATING		DELCO PART No.	NOTES
	OHMS	WATT		
R10	47K		1219	
R11	1meg		1235	
R12	6.8meg		1245	
R13	220K		1227	
R14	220K		1227	
R15	330Ω	1(WW)	1156	
R16	1800Ω	2(WW)		Note 1.
R17	15K	2	1277	

Note 1. Mfg. recommends replacing with 2700Ω 2W (Part #1204) and 5600Ω 1W (Part #1171) in parallel.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	12.6VCT @ 1.8A	530VCT @ .052A		7265604		P-2860①			22R79 ①	

① Use original channel frame.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6600Ω	3-4Ω	7271816	Z1002 ①	A-3020①	AU-600①	A-3823①	26S48①	S-53X①	① Use Original Channel Frame

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4" x 8"	PM	3-4Ω	7272368		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		DELCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	7255738	19-1004	BC-565	4610		6.5 Microhenries
L2	Ant. Coil	1221138					
L3	RF Coil	1221138					
L4	Osc. Coil	1221150					
L5	Input IF	1220990	16-6756	BC-317	13-PH1		
L6	Output IF	1220992		BC-320	13-PH6		
L7	Fil. Choke	1217846					1.4 Microhenry
L8	Hash Choke	1221077					

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				DELCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12.6 VDC	115∿	8555	6330	G1602/G883	6330	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2		7½A 32V	455640	153-R				

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M3	Lamp	274020	#1892
M4	Speaker Ass'y	Model AC-2908	Complete, for 5" x 7" Rear Seat Speaker Installation
	Printed Board	7269376-J	

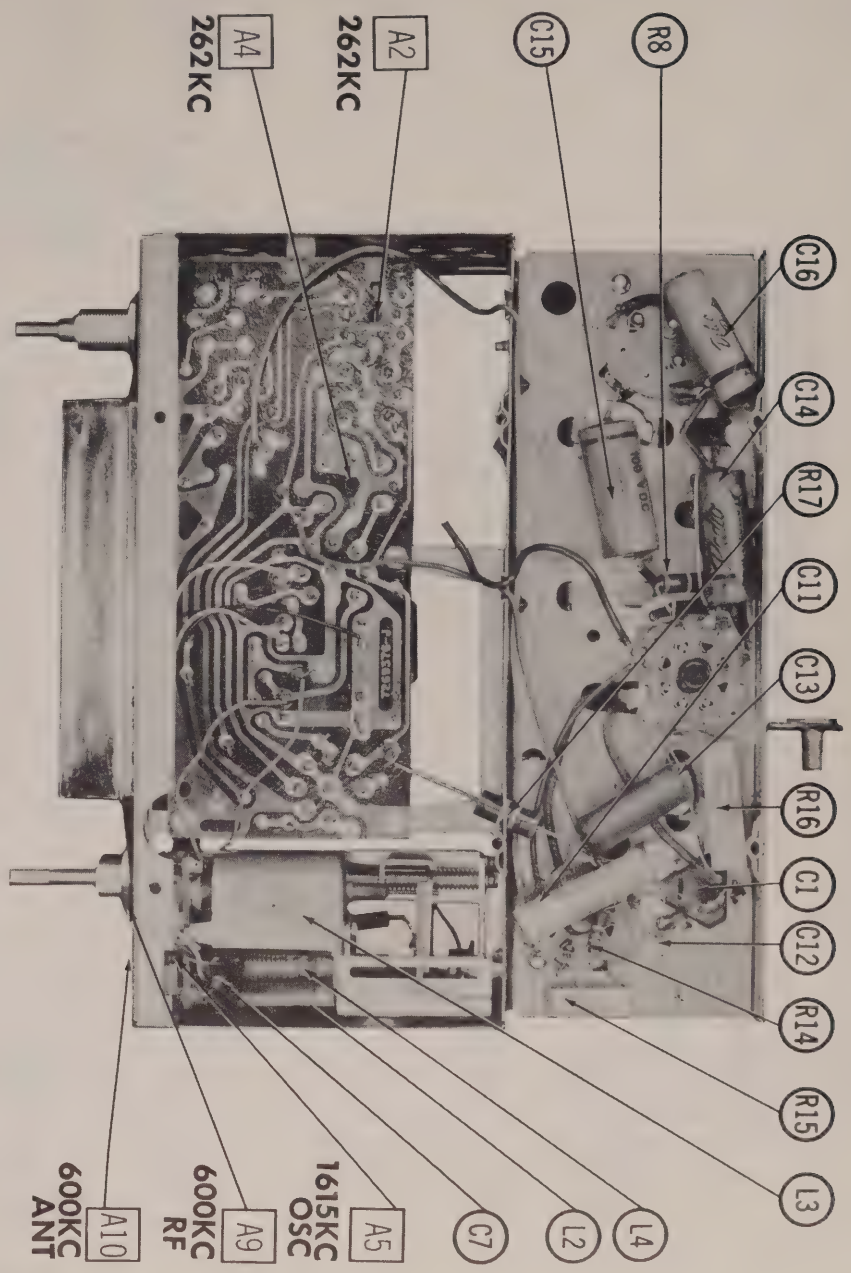
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

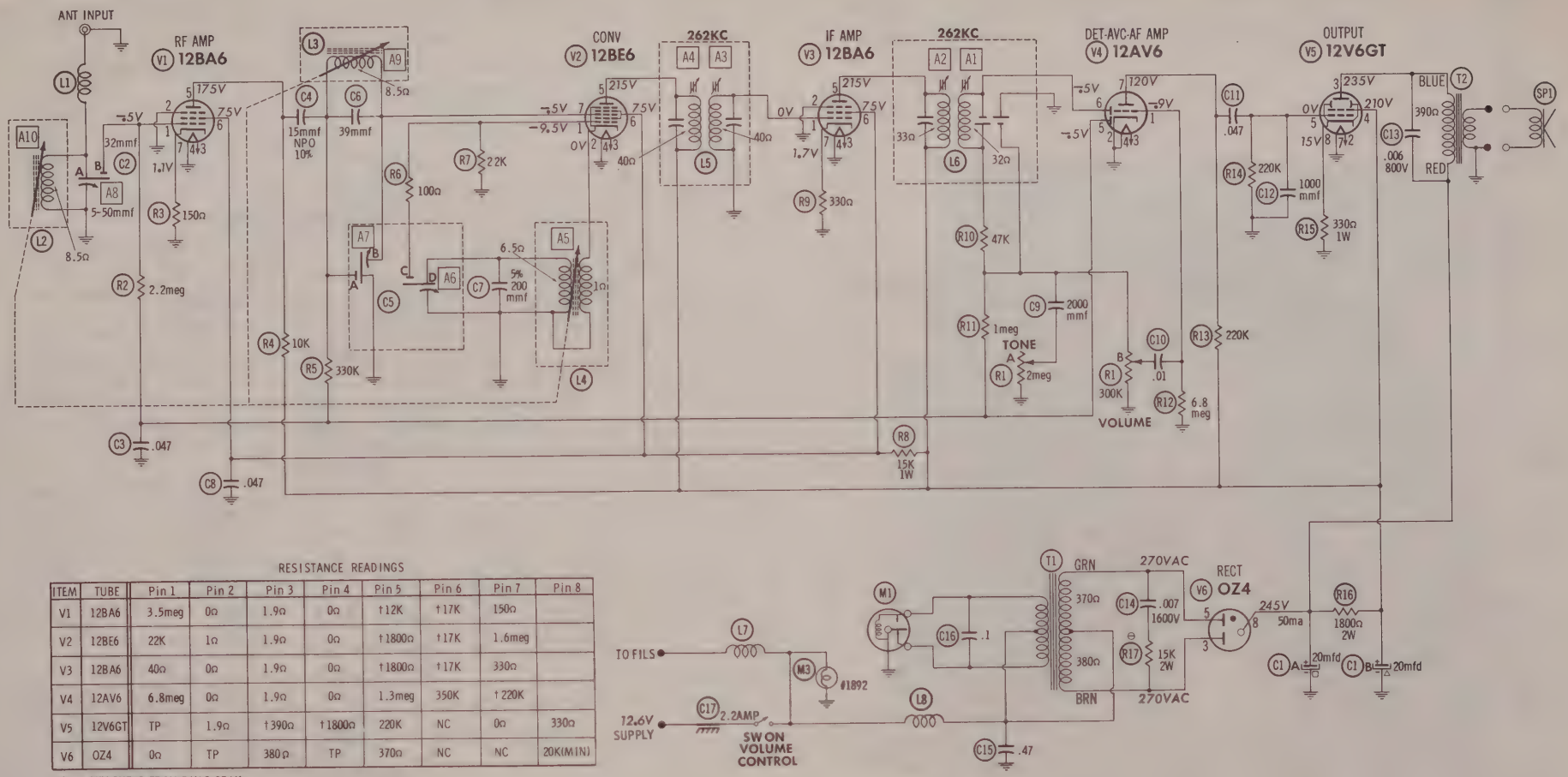
CHASSIS—BOTTOM VIEW



STUDEBAKER MODEL AC-2905

FOLDER 16

STUDEBAKER MODEL AC-2905



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12BA6	3.5meg	0Ω	1.9Ω	0Ω	†12K	†17K	150Ω	
V2	12BE6	22K	1Ω	1.9Ω	0Ω	†1800Ω	†17K	1.6meg	
V3	12BA6	40Ω	0Ω	1.9Ω	0Ω	†1800Ω	†17K	330Ω	
V4	12AV6	6.8meg	0Ω	1.9Ω	0Ω	1.3meg	350K	†220K	
V5	12V6GT	TP	1.9Ω	†390Ω	†1800Ω	220K	NC	0Ω	330Ω
V6	OZ4	0Ω	TP	380Ω	TP	370Ω	NC	NC	20K(MIN)

† MEASURED FROM PIN 8 OF V6
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SYLVANIA MODELS 3305BL, 3305TA (Ch. 1-620-1)

SYLVANIA MODELS
3305BL, 3305TA (Ch. 1-620-1)

MODEL 3305BL

TRADE NAME	Sylvania Models 3305BL, 3305TA (Ch. 1-620-1)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products Inc., 700 Ellicott St., Batavia, N.Y.
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	9 Volts DC & 1.5 Volts DC RATING 11.5MA @ 9 Volts DC & 3.3MA@ 1.5 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400∿ Mod)	Tuning Gang Fully Open	Across Voice Coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1650KC	"	"	A4	"
3.		"	600KC	600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang. Repeat steps 2 and 3.
4.		"	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DISASSEMBLY INSTRUCTIONS

1. Remove two push-on type control knobs.
2. Remove screw located behind tuning knob.
3. Open case (depress top of front case near handle ends and gently pull top of rear case.
4. Remove two chassis mounting screws. Note that one screw has a fiber washer.
5. Remove chassis from case.

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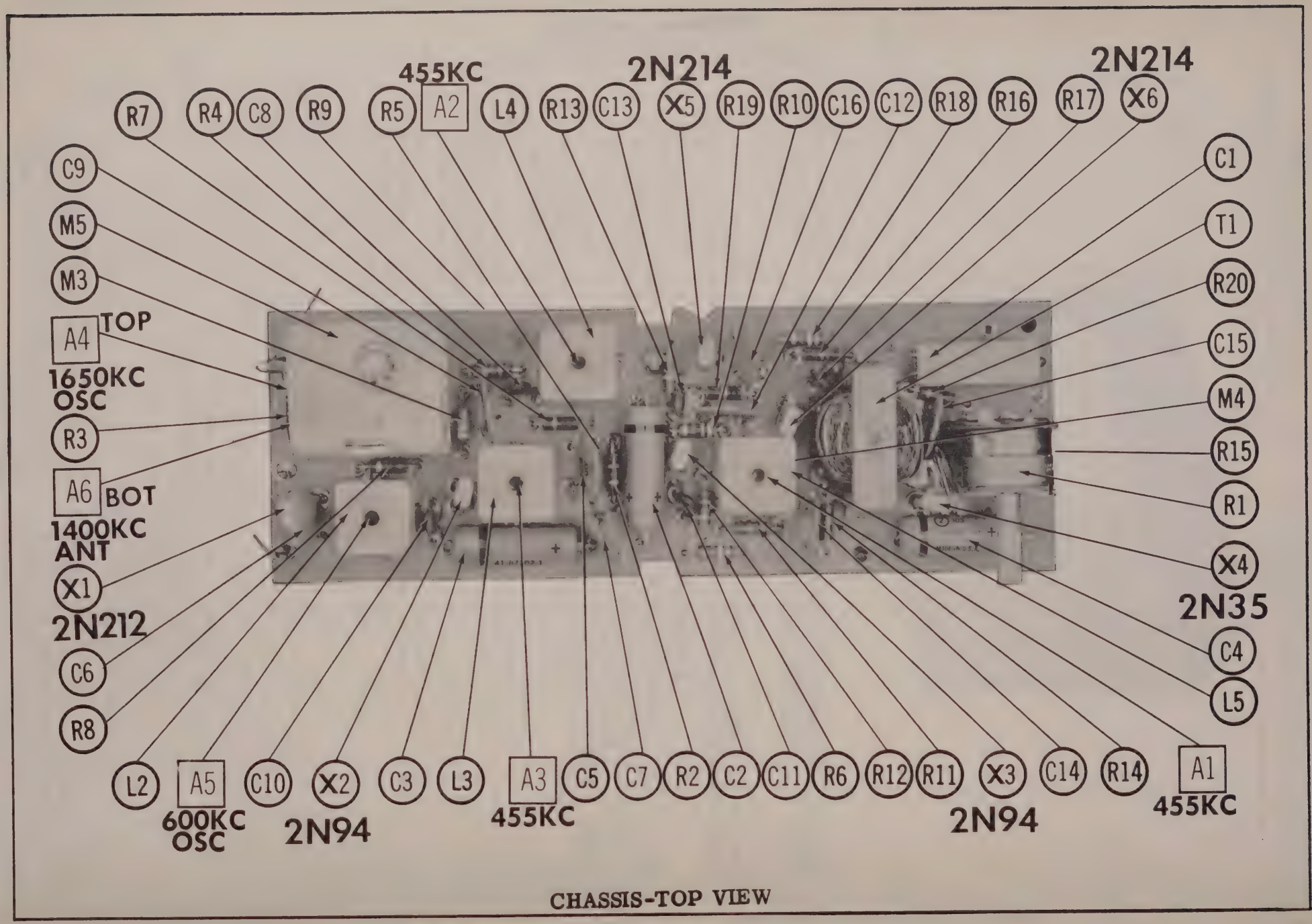
H614

SET 410 FOLDER 17



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N212	Converter	CBS-2N439			2N212	NPN
X2	2N94	1st. IF Amplifier	CBS-2N438			2N94	NPN
X3	2N94	2nd. IF Amplifier	CBS-2N438			2N94	NPN
X4	2N35	Driver	CBS-2N438			2N35	NPN
X5	2N214	Output				2N214	NPN
X6	2N214	Output				2N214	NPN

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	10	161-2020						
B	50	10							
C2	50	3	161-1043	XPP-3050	NL50-3	TT6X50	NL50-3	MMT-350	TE-1100
C3	25	3	161-1045	XPP-3025	NL25-3	TT3X25	NL25-3	MMT-325	TE-1055
C4	50	3	161-1043	XPP-3050	NL50-3	TT6X50	NL50-3	MMT-350	TE-1100

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	50000		169-0054	BPD-05	DF-503			5HK-S5	
C6	10000		168-0020	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C7	50000		169-0054	BPD-05	DF-503			5HK-S5	
C8	11		166-0011						NPO 10%
C9	50000		169-0054	BPD-05	DF-503			5HK-S5	
C10	220000		169-0067						
C11	11		166-0011						NPO 10%
C12	50000		169-0054	BPD-05	DF-503			5HK-S5	
C13	220000		169-0067						
C14	20000		169-0055	BPD-02	DD-203	BYB6S2		5HK-S2	
C15	10000		169-0064	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C16	50000		169-0054	BPD-05	DF-503			5HK-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2500Ω	½	152-0042					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SYLVANIA PART No.	NOTES
	OHMS	WATT		
R2	1800Ω		181-0182	
R3	6800Ω 5%		181-0682	
R4	6800Ω		181-0682	
R5	100K		181-0104	
R6	3900Ω		181-0392	
R7	2200Ω		181-0222	
R8	100Ω		181-0101	
R9	33K		181-0333	Note 1
R10	470Ω		181-0471	
R11	6800Ω 5%		181-0682	

Note 1. Used only in chassis with Code 01.

ITEM No.	RATING		SYLVANIA PART No.	NOTES
	OHMS	WATT		
R12	1800Ω		181-0182	
R13	820Ω		181-0821	
R14	150Ω		181-0151	
R15	820Ω		181-0821	
R16	150Ω		181-0151	
R17			189-0076	Note 2
R18	3900Ω		181-0392	
R19	10Ω		181-0100	
R20	100Ω		181-0101	

Note 2. Temperature compensating, 150Ω @ 77° F.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART Nc	
T1	1.5 :	1	143-0063						

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	340Ω CT	6-8Ω	143-0062							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	4" x 6"	PM	6-8Ω	539-4603 ①	46A1Z6	① Includes T2

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SYLVANIA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	581-0012					
L2	Osc. Coil	113-0039					
L3	1st. IF	121-0103					
L4	2nd. IF	121-0103					
L5	3rd. IF	122-0031 *					

* Includes crystal, M4 and cap.

BATTERIES

ITEM No.	VOLTAGE	SYLVANIA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			1		935		M-14	6 used.
M2	1.5V			1		935		M-14	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		SYLVANIA PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N295		1N60	1N295	AVC Rectifier (Pigtail)
M4	1N295		1N60	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M5	Tuning Cap. Printed Board	170-0026 32-87682-1	2 Gang (Ant. 16-183mmf, Osc. 18-110mmf)

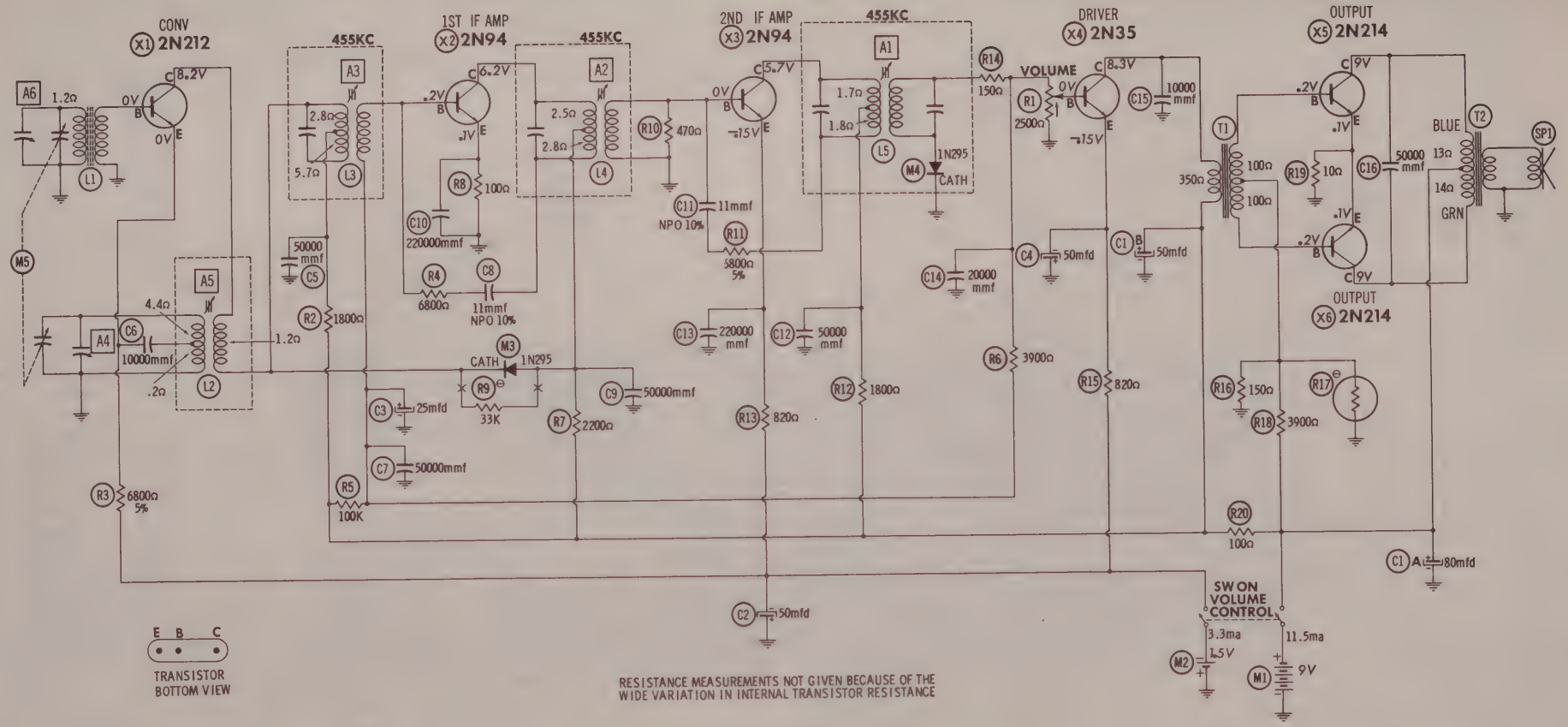
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	741-0041	Tuning
Knob	740-0178	On-Off-Volume, Model 3305BL
Knob	740-0177	On-Off-Volume, Model 3305TA
Case Front	822-0027	Model 3305BL
Case Front	822-0025	Model 3305TA
Case Rear	822-0026	
Handle	818-0132	Model 3305BL
Handle	818-0131	Model 3305TA
Cover	803-0017	Battery Holder
Cover & Leads Ass'y.	803-0018	Battery Holder

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

1. DC voltage measurements taken with vacuum tube voltmeter
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

❸ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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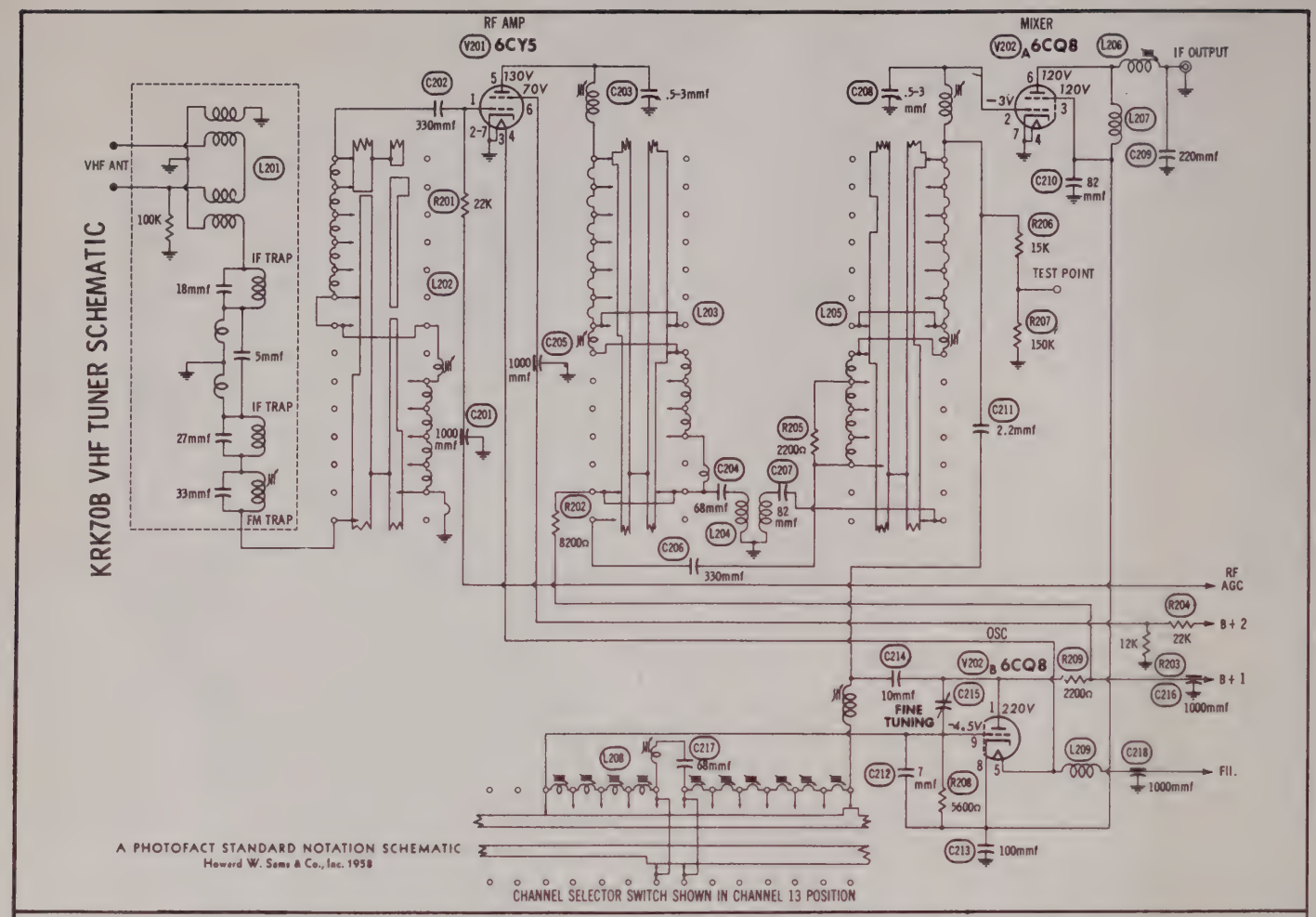
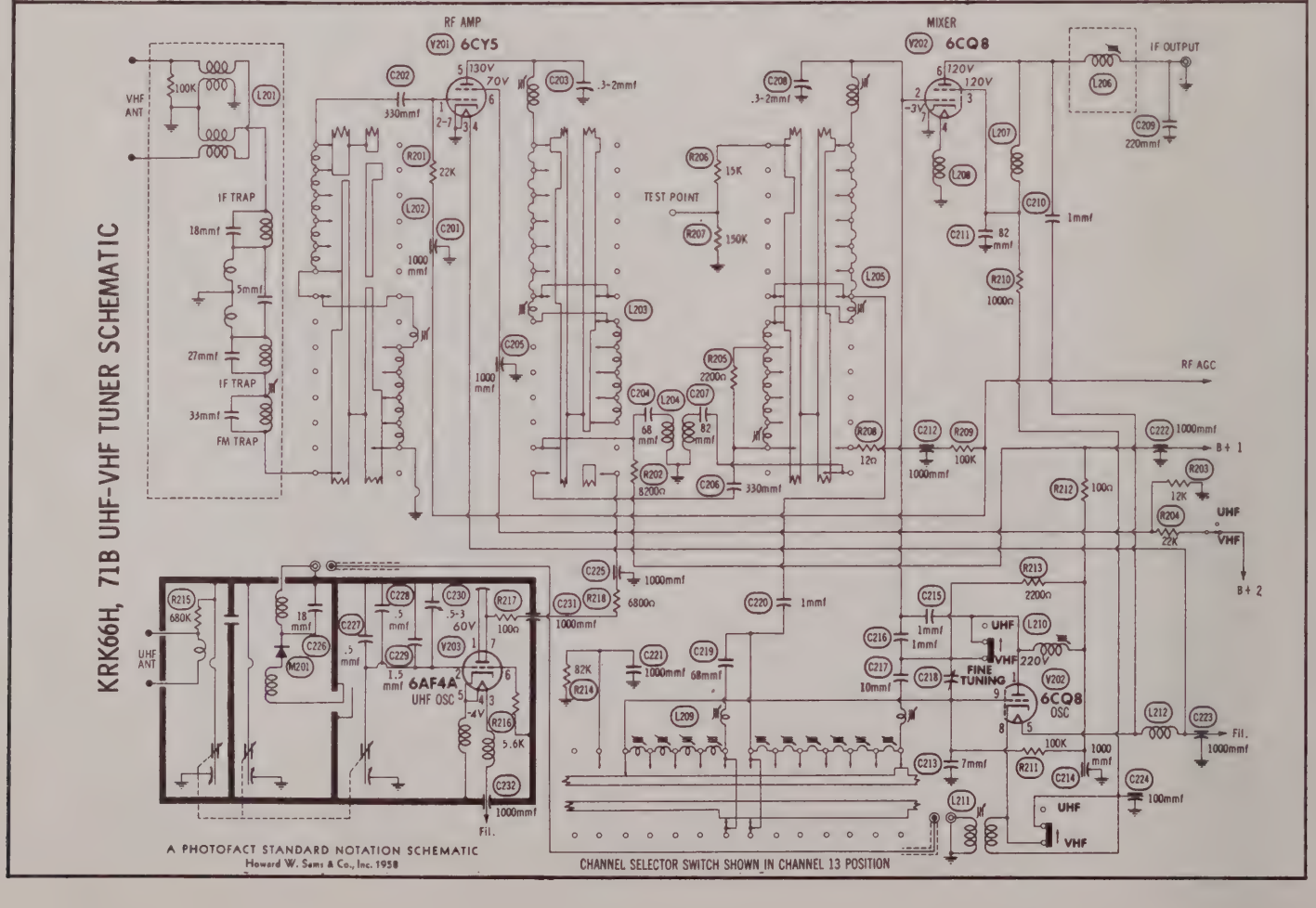
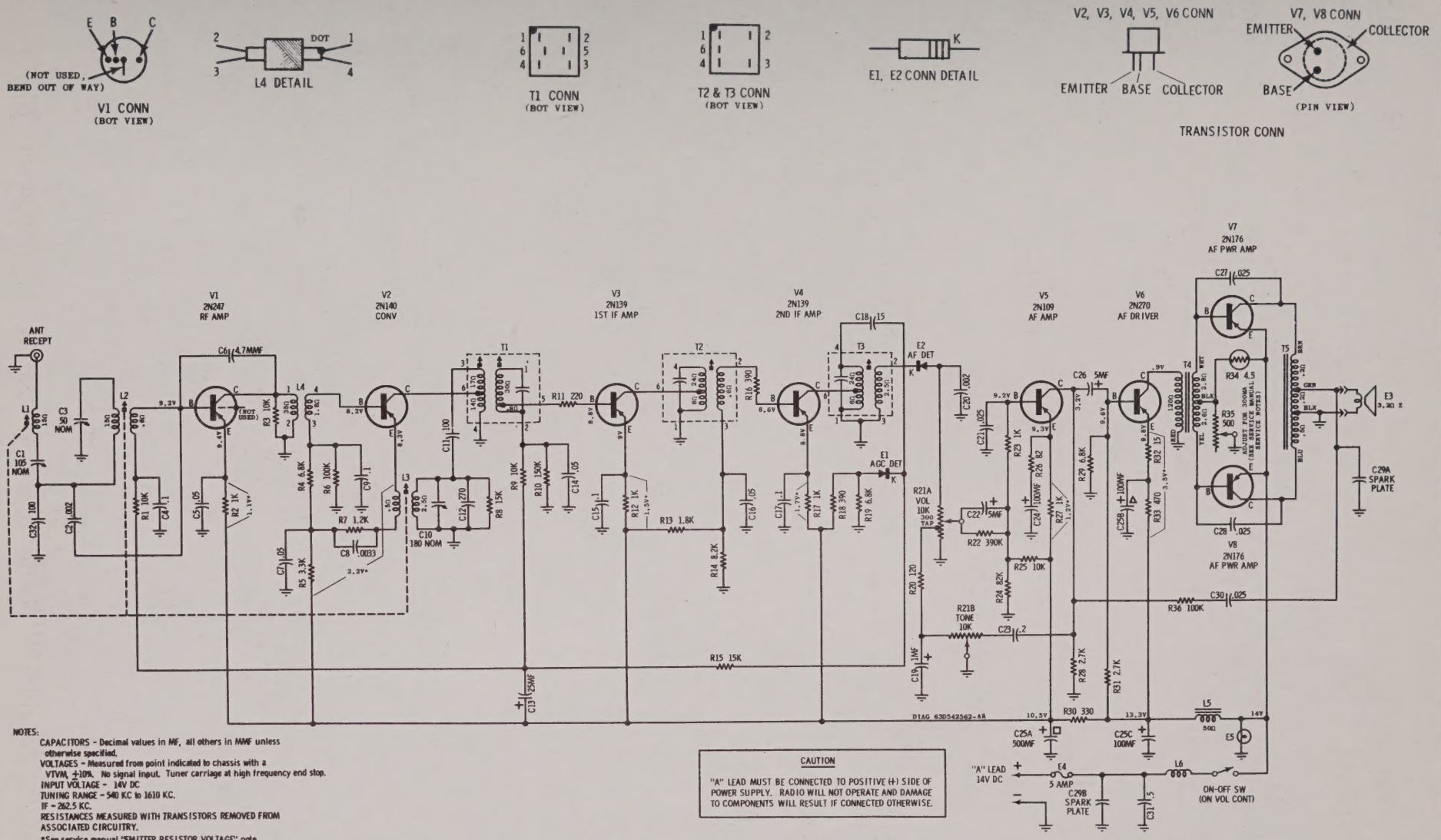

KRK70B VHF TUNER SCHEMATIC
RF AMP
V201 6CY5
MIXER
V202A 6CQ8
IF OUTPUT
VHF ANT
L201
100K
IF TRAP
18mmf
5mmf
27mmf
33mmf
FM TRAP
C202
330mmf
R201
22K
L202
C201
1000 mmf
C203
.5-3mmf
L203
C205
1000 mmf
R202
8200Ω
C204
68mmf
C207
82 mmf
L204
C206
330mmf
L205
R205
2200Ω
C208
.5-3 mmf
L206
L207
C209
220mmf
C210
82 mmf
R206
15K
TEST POINT
R207
150K
C211
2.2mmf
RF AGC
R204
22K
B+ 2
12K
R203
B+ 1
C216
1000mmf
OSC
C214
10mmf
V202B 6CQ8
R209
2200Ω
C215
FINE TUNING
~4.5V
220V
L208
C217
68mmf
C212
7 mmf
R208
5600Ω
L209
C218
Fil.
1000mmf
C213
100mmf
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION


KRK66H, 71B UHF-VHF TUNER SCHEMATIC
RF AMP
V201 6CY5
MIXER
V202 6CQ8
IF OUTPUT
VHF ANT
L201
100K
IF TRAP
18mmf
5mmf
27mmf
33mmf
FM TRAP
C202
330mmf
R201
22K
L202
C201
1000 mmf
C203
.3-2mmf
L203
C205
1000 mmf
R206
15K
TEST POINT
R207
150K
L205
R205
2200Ω
C204
68 mmf
L204
C207
82 mmf
R202
8200Ω
C206
330mmf
C208
.3-2mmf
L206
L207
L208
C209
220mmf
C210
1mmf
C211
82 mmf
R210
1000Ω
RF AGC
R208
12Ω
C212
1000mmf
R209
100K
C222
1000mmf
B+ 1
R212
100Ω
R203
12K
R204
22K
UHF
VHF
B+ 2
UHF ANT
R215
680K
C225
1000mmf
R218
6800Ω
C231
1000mmf
C220
1mmf
R213
2200Ω
C215
1mmf
C216
1mmf
C217
10mmf
C218
FINE TUNING
220V
V202 6CQ8 OSC
L210
C221
1000mmf
82K
R214
C219
68mmf
L209
C213
7mmf
R211
100K
C214
1000 mmf
L212
C223
Fil.
1000mmf
C224
100mmf
L211
C226
18 mmf
C227
.5 mmf
C228
.5 mmf
C229
1.5 mmf
C230
.5-3 60V
R217
100Ω
V203
6AF4A
UHF OSC
R216
5.6K
C232
1000mmf
Fil.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION



NOTES:

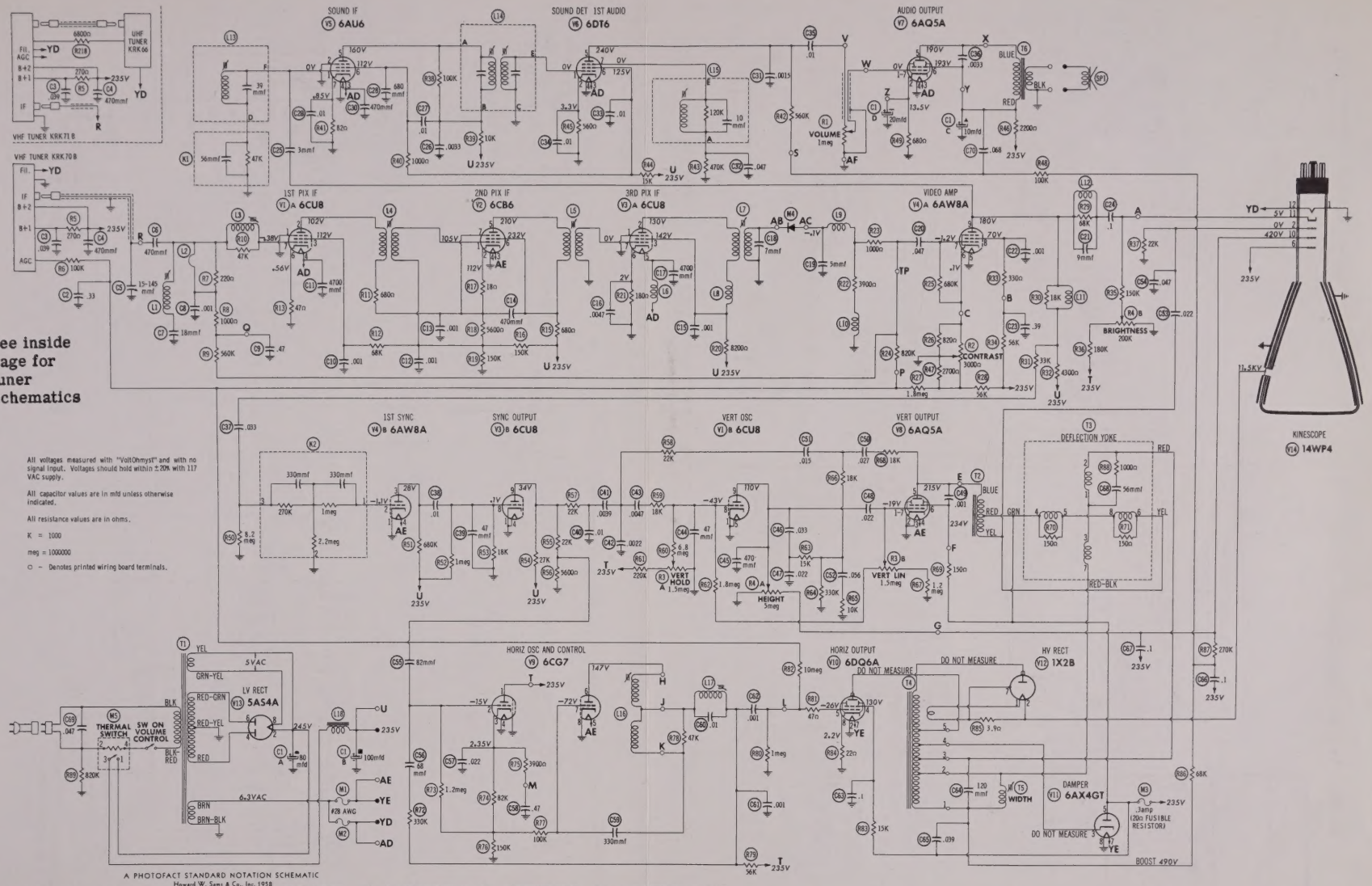
CAPACITORS - Decimal values in MF, all others in MMF unless otherwise specified.
VOLTAGES - Measured from point indicated to chassis with a VTVM, ±10%. No signal input. Tuner carriage at high frequency end stop.
INPUT VOLTAGE - 14V DC
TUNING RANGE - 540 KC to 1610 KC.
IF - 262.5 KC.
RESISTANCES MEASURED WITH TRANSISTORS REMOVED FROM ASSOCIATED CIRCUITRY.
*See service manual "EMITTER RESISTOR VOLTAGE" note.

CAUTION

"A" LEAD MUST BE CONNECTED TO POSITIVE (+) SIDE OF POWER SUPPLY. RADIO WILL NOT OPERATE AND DAMAGE TO COMPONENTS WILL RESULT IF CONNECTED OTHERWISE.

MOTOROLA MODEL GV-800

Schematic Diagram Courtesy of Motorola, Inc.



RCA VICTOR Models 14PD9030, U, 14PD9033, U, 14PD9034, U, 14PT9011, U, 14PT9012, U
(Ch. KCS 120A, B)

Schematic Diagram Courtesy of Radio Corp. of America

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